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ABSTRACT

The interaction of teacher, learner, content, and instruction is the process of teaching and learning, a single activity. The theoretical and the practical elements of this process are examined in the context of a model that explains the key elements of the process: identification, prescription, application and evaluation. These elements are analyzed with special emphasis on the identification phase. In the course of this examination, self-exploration exercises are provided. A bibliography directs teachers to more comprehensive sources of information. (JD)

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THE TEACHING AND LEARNING PROCESS

(with emphasis on identification)

Terry W. Blue

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION

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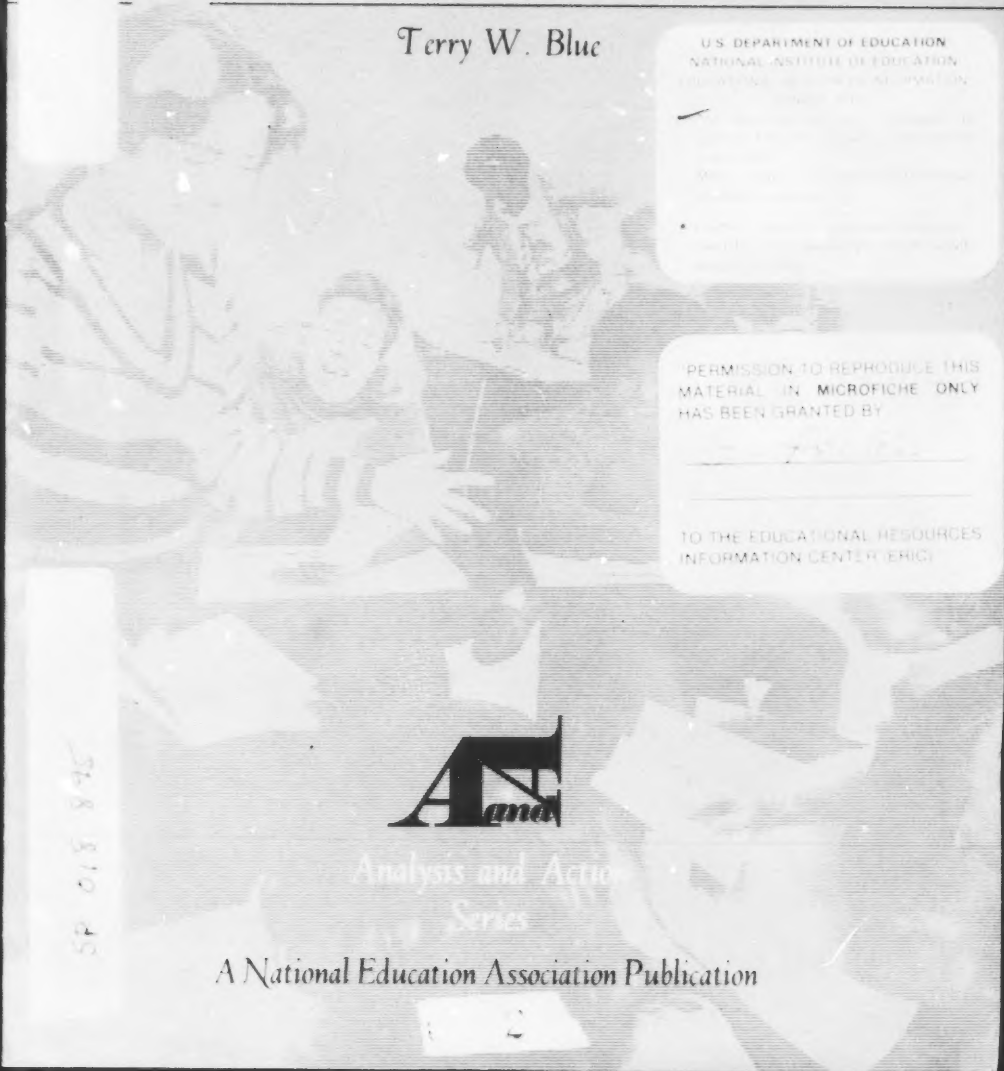

Analysis and Action Series

A National Education Association Publication

THE TEACHING AND LEARNING PROCESS

(with emphasis on Identification)

Terry W. Blue

nea
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PREFACE

The Teaching and Learning Process has been written with the needs and interests of pre-service and in-service educators in mind. Because of the scope and objectives of this particular monograph, the primary emphasis will be given to the identification phase of the process. This monograph is an attempt to examine both the theoretical and practical elements of the process in which classroom teachers are involved throughout their professional lives. It is also an attempt to seek the commonalities among all educational levels. While designed for the individual teacher, the text is suitable for undergraduate and graduate courses and practicums or as a workshop or in-service reference for teachers and administrators.

The purposes of the book are (1) to provide a model to explain the key elements in the teaching and learning process; (2) to examine each of these elements; (3) to give teachers the opportunity to evaluate their positions on and/or competence in each of these areas; and (4) to direct teachers to more comprehensive sources of information. Although by design a brief overview of the topic, this text attempts to present fresh perspectives on concerns and issues of crucial importance to practicing professionals in their daily work with learners of all ages and at all levels.

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CHAPTER 1
A MODEL OF THE PROCESS

INTRODUCTION

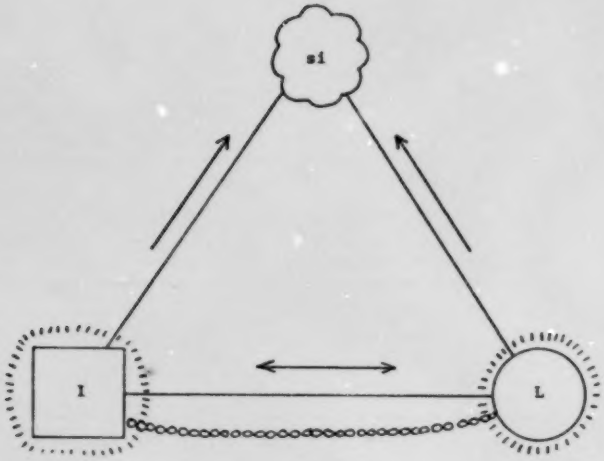
The teaching and learning process does not lend itself to succinct and simple description. It is instead a complicated process composed of many diverse, and at times conflicting, forces and elements. To describe it in any other way would make as much sense as to represent the collective bargaining process as a simple series of meetings or to depict golf as a game played with sticks, balls, and holes.

To understand any process, one must first identify and analyze each of its constituent elements in order to determine the role these elements play in the overall process. The teaching and learning process, however, to some extent defies such careful scrutiny. Because our knowledge of its elements and their interrelationships is still incomplete, the best we can hope to accomplish is to begin to make sense out of what we already know. This book therefore organizes and reports some of this knowledge and considers the possible ramifications of these issues with which educators and researchers are still struggling.

Fortunately, many have made significant contributions to the discussion in the past. Their ideas are the basis for the summaries presented in the chapters which follow. This chapter first discusses the elements of the teaching and learning process, and then provides a model for consideration and guidance.

COMPONENTS OF THE MODEL

Searles (30,29) has described a system of instruction as an interrelated functioning of three components — the search image (learning task), the learner, and the instructor. As the system operates, the three parts are put into a reciprocating relationship, with each affecting the other and each shaped by the other. Figure 1-1 depicts these three components and the patterns of their interaction.



si — the search image; the learning task of the system
I — the instructor
L — the learner
⟶ — inputs; the emotional and intellectual power put into the system
⟷ — feedback; the phenomenon responsible for allowing strategies to be changed
⟿ — chain of human affection; the web of feelings between individuals working together
◌ — perception screen; the unique and constantly changing way one perceives the world (29, p. 81)

Figure 1-1
System of Instruction

Searles describes his system as follows:

> The system is put into operation by power put in by the instructor and/or learner. The instructor has the power of determining the structure of the learning task and has a residual ex-officio power granted by the institution. He is the surrogate of responsibility for the functioning of the system and the meeting of the goals of the system. The power he wields is considerable. The learner's power input is motivation. Either intrinsically or extrinsically motivated, he answers the call for action and also can put the system into operation as he discovers for himself, to varying degrees, the structures.

> Connecting the learner and instructor are two forces. One is the feedback mechanism of the system that enables the instructor to determine how the learner is proceeding with the learning task. . . . Also connecting the two is a chain of human interrelationships which binds, to one degree or another, any two people who are working together. This is the strong web of feelings which grows between individuals, the degree of emotional attachment which either beclouds or glorifies any human relationship depending on one's point of view.
>
> But surrounding each participant in the system of instruction is his own perception screen, the unique way that he has of perceiving the world. These ways of perceiving are an outgrowth of his whole background, environmental and genetic. The screen is undergoing a constant revision, as new experiences come to the organism. (29, pp. 79-80)

Searles clearly has identified three major components of the teaching and learning process and their interrelationships. Reaching the search image, mastering the learning task, is possible only through a dynamic process triggered, regulated, and maintained by teacher and learner in an affectively charged environment. Moreover, Searles continues by describing four patterns which guide the instructor in setting his or her idiosyncratic style of teaching. Three of these patterns — organization (planning), cohesion (evaluation), and time — will receive limited attention in this text. The fourth, patterns of organization — the interaction of subject, teacher, learner, and instruction in the formal teaching setting — will be the focus. To understand the interrelationships among these elements for the purpose of this discussion, some adaptations of the Searles model are necessary:

1. The role of the learner in the process of teaching and learning needs clarification. While the learner's self-knowledge is important, in the "average" classroom setting, the teacher's knowledge about the learner is more important. The definition of "learner" should therefore reflect this emphasis.
2. The model does not adequately reflect the elements of instruction, although Searles discusses them elsewhere. The teacher's knowledge about the process of organizing instruction is more important that what seems just to happen rather mysteriously as a product of teacher-student interaction. Therefore an element focusing on instruction, and all that is known about it, should be added to the model.

3. The teacher's command of the content being taught should have a place in the model. This includes the knowledge, abilities, and attitudes developed in the classroom setting.
4. Mastery of the learning task is the *product* of teaching and learning. The interaction of teacher, learner, subject, and instruction is the *process* of teaching and learning. An adapted model should reflect this.

Thus it is apparent that a new model will emphasize the role of the teacher in the process of teaching and learning. This is not to "play down" the contribution of learners, but rather to emphasize the importance of the instructor in the "average" classroom in the very practical teaching world. In other words, while the Searles model might more accurately portray the dynamics of learning, the purpose of the new model is to more clearly describe the role of the teacher in both teaching and learning. It is to this model that discussion now turns.

A MODEL OF THE TEACHING AND LEARNING PROCESS

With the emphasis on the role of the teacher, then, four elements combine to make up the Identification phase of the teaching and learning process. These are as follows:

1. Teacher knowledge of learners and how they learn.
2. Teacher knowledge of self and of approaches to the teaching task.
3. Teacher knowledge of the knowledge, skills, and attitudes to be developed in his or her class.
4. Teacher knowledge of organizing, structuring, and sharing knowledge.

Figure 1-2 graphically depicts these four elements as subsets of a larger set or Identification in the teaching and learning process. Although interrelated, these elements are not mutually dependent; rather, they are separate but parallel elements. Each, however, must be fully at the teacher's command if the process is to operate at peak level.

The purpose of the teaching and learning process is to produce some change in knowledge, abilities, or attitudes — that is, learning. As we have seen, the first step toward meeting this goal is Identification. The complete model of the process has three other phases — Prescription, Application, and Evaluation. Figure 1-3 graphically depicts the relationships among the four phases.

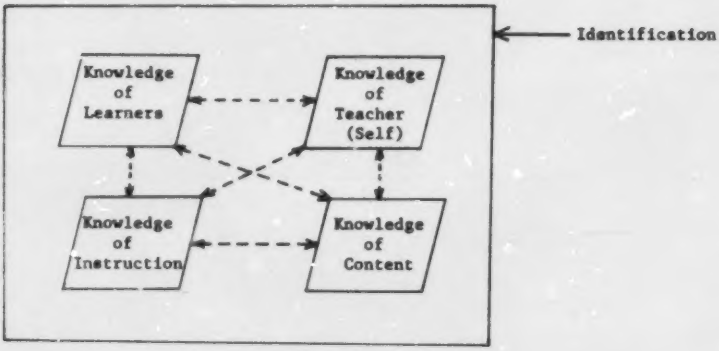


Figure 1-2
Subsets of the Identification Phase of the Teaching and Learning Process

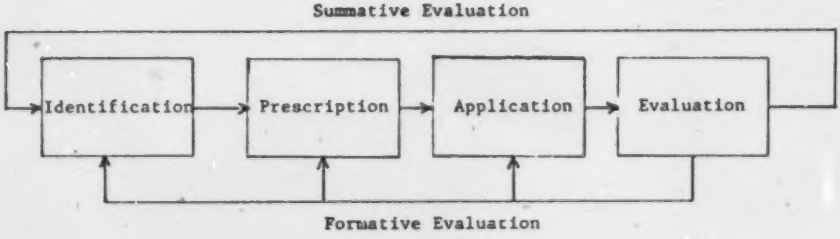


Figure 1-3
Elements of the Teaching and Learning Process

Although this model will be discussed in greater detail in chapter 6, a brief description of each component may be helpful here. The process begins with Identification, making decisions regarding the four elements described earlier. Prescription, the planning of objectives, procedures, and activities, then follows. The third step is Application, the implementation of this planning. Finally, there is Evaluation of the product of the efforts of teachers and learners. Formative evaluation provides the teacher with the opportunity to reconsider all the elements and to make adjustments while the process is under way. Summative evaluation provides the teacher with feedback that can be used to help structure subsequent activities.

By using the symbolism of the flow chart, it is possible to present a more complete model of the entire process. For those unfamiliar with these symbols, the following key is provided.

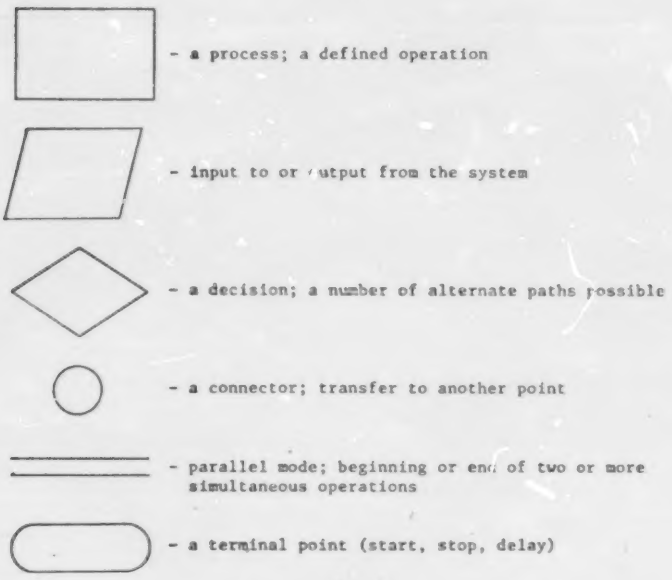

- a process; a defined operation
- input to or output from the system
- a decision; a number of alternate paths possible
- a connector; transfer to another point
- parallel mode; beginning or end of two or more simultaneous operations
- a terminal point (start, stop, delay)

Figure 1-4 (on pp. 14–15) presents the more complete model used to organize the remainder of this text. While it looks formidable, the model describes a fairly simple, commonsense sequence of steps which lead to a fuller understanding of the teaching and learning process. A brief explanation of some parts of the flow chart should demonstrate this.

The dotted lines which indicate the terminal points of the flow chart suggest that the model is not complete. As indicated previously, for example, the model does not clearly depict the contribution of learners to the process. Further, teachers need a variety of other knowledge, skills, and attitudes for full preparation for classroom service. The model includes only selected key ingredients.

The series of columns at the top of the flow chart represent the four parallel subsets that make up and ultimately produce the Identificaton phase of the teaching and learning process. The elements of each subset are presented as a series of decisions, a sequence of questions requiring

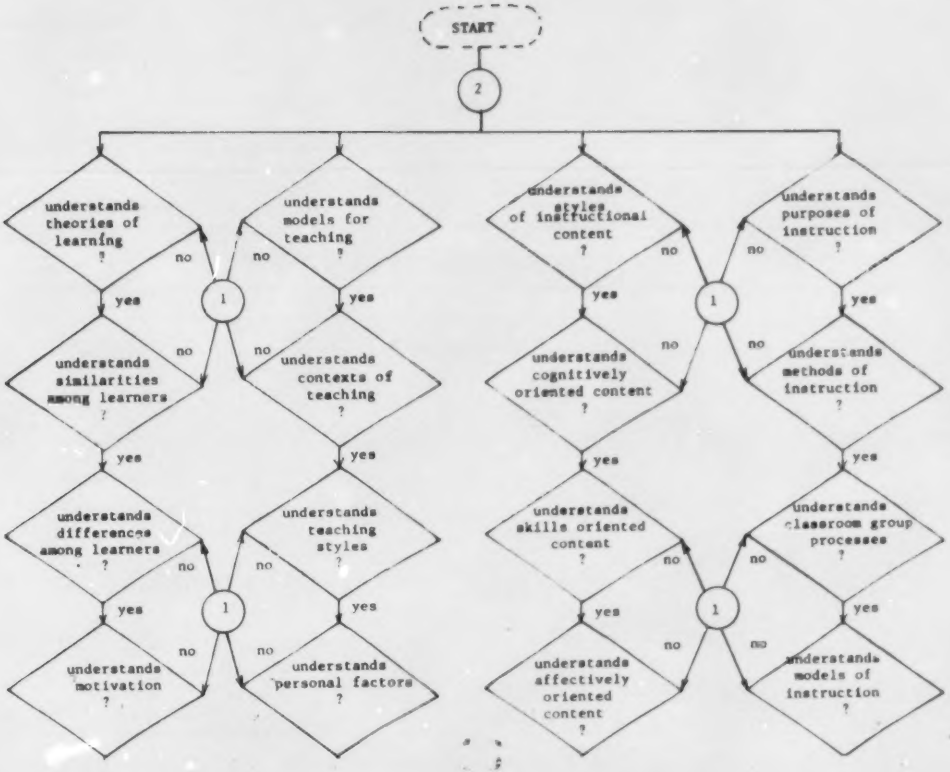
affirmative answers for success. When responses are negative, a review or remedial sequence (indicated by connector number one ① and shown at the lower left corner of Figure 1-4) is necessary. After satisfactorily completing this subprogram, one can return to the main flow chart.

The four subsets — Knowledge of Learners, of Teacher, of Content, and of Instruction — are the result, the output, of the four columns. These parallel elements make up the Identification phase and, in turn, lead to the other components: the process of Prescription, the product that is the result of Application, and the Evaluation of effectiveness. The lines connecting a negative decision on Evaluation with the three other components indicate formative evaluation of this application. Connector number two ② indicates summative evaluation of the teaching and learning process; it shows that when the product of the process is not fully successful, there is a need to reconsider all elements of the model. Something has gone wrong; the source of the problem should be found.

APPLICATION OF THE MODEL

The remainder of this text discusses the components of this model, briefly analyzing each substantive element. Emphasis will be on the Identification phase and its four subsets. The issues addressed in each question of the flow chart will provide the headings for sections of the next four chapters dealing with these areas. The treatment of Prescription, Application, and Evaluation will, of necessity, be brief.

While the text is an attempt to discuss a variety of important issues, the scope of this work does not permit a complete review. Readers who would like additional information in a particular area will find helpful sources listed in the Bibliography and the Appendix.


START
2
understands theories of learning ?
understands models for teaching ?
understands styles of instructional content ?
understands purposes of instruction ?
understands similarities among learners ?
understands contexts of teaching ?
understands cognitively oriented content ?
understands methods of instruction ?
understands differences among learners ?
understands teaching styles ?
understands skills oriented content ?
understands classroom group processes ?
understands motivation ?
understands personal factors ?
understands affectively oriented content ?
understands models of instruction ?
1
yes
no

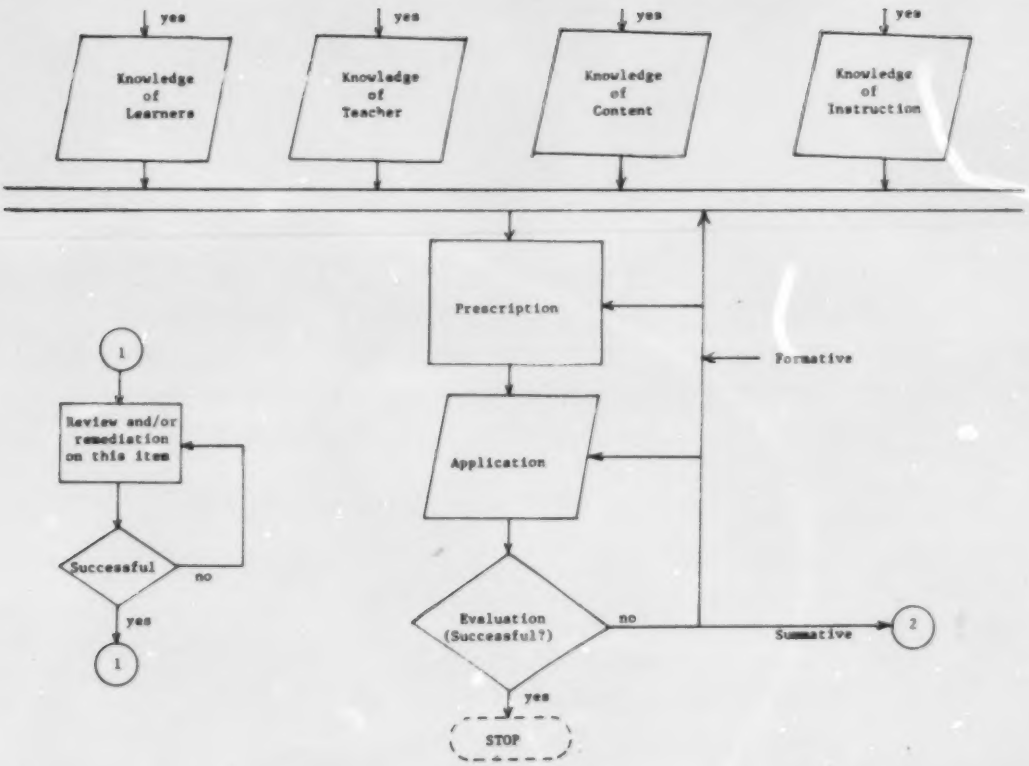


Figure 1-4
Model of the Teaching and Learning Process

CHAPTER 2
THE LEARNER

LEARNING AND LEARNING THEORY

It would be convenient to begin the chapter on the learner by providing a complete definition of learning. However, it is beyond the scope of this book to examine in any substantial depth the definition of this important concept. The reasons for this difficulty will probably become clear if you complete the following questionnaire, which examines various viewpoints concerning the nature of human behavior.

Table 2-1
Viewpoints on Human Behavior

Directions: Mark the response that best explains your reaction to each statement. Mark *SA* if you strongly agree, *A* if you moderately agree, *U* if you are undecided, *D* if you moderately disagree, and *SD* if you strongly disagree.

	SA	A	U	D	SD
1. Human behavior is governed, controlled, and manipulated by environmental stimuli.	___	___	___	___	___
2. Human behavior is governed by the same universal laws that control all natural phenomena.	___	___	___	___	___
3. The scientific method is appropriate to the study of human behavior.	___	___	___	___	___
4. Human behavior can be described in absolute and objective terms.	___	___	___	___	___
5. Human behavior is predictable.	___	___	___	___	___
6. Human behavior is only the observable expression and consequence of an essentially private world of being.	___	___	___	___	___
7. Humans are free to make choices of their own volition regardless of environmental stimuli.	___	___	___	___	___
8. Human behavior is unpredictable and can only be described in relative and subjective terms.	___	___	___	___	___
9. Each person is unique, with qualities the individual does not realize.	___	___	___	___	___
10. A "science of humans" is necessary to understand human diversity.	___	___	___	___	___

Philosophers and psychologists alike have proposed and discussed two models or images of humanity. The behaviorist orientation considers human beings to be passive organisms governed by stimuli from the external environment. Through proper control of environmental stimuli, people can be manipulated, their behavior governed. According to behaviorists, the laws that govern humans are the same as the universal laws that govern all natural phenomena. Therefore, the scientific method evolved by the physical sciences is also appropriate for the study of the human organism. As you probably noted, the first five statements on the questionnaire reflect this viewpoint.

The last five statements present a summary of some of the major assertions of the phenomenological orientation. According to this view, humans are the source of their acts; thus they are free to make choices in every situation. The focal point of this freedom is human consciousness. Advocates of this position feel that behavior is only the observable expression and consequence of an essentially private, internal world of being. Therefore, only a "science of humans" which begins with experience, as it is immediately given in this world of being, can be adequate for a study of the human organism (22).

Unless your responses to the questionnaire fall neatly into one extreme (the first five items) or the other (the last five items), you probably face a fairly common problem. While both views may have elements of truth and while it may not be necessary to make a final choice, it is important to be sensitive to the paradoxes possible in a hastily developed personal position. The acceptance of either model to the exclusion of the other, or the nature of the combination one personally creates, may have important implications for one's everyday professional life. More importantly, teaching is an activity which should emerge from some conceptualization of how learning occurs. It is the responsibility of each individual to clarify his/her viewpoint on this process.

A narrow definition of learning, however, depends, at least in part, on such conceptualization. Therefore only a broad definition will be provided here, one lacking the precision possible when all share a common view, but general enough to cover a variety of perspectives. Fraenkel's definition is of this type:

> Learning refers to any change which takes place in an individual that is not due to maturation. When a person learns, that person thinks, feels, or acts in a manner that is somehow different from the manner in which he or she acted, felt, or thought before the learning took place. He or she may have acquired a new idea or insight, may have

> improved an old (or mastered a new) skill, or may be able to perform at a higher level of proficiency than before. Learning "may be considered a change in insights, behavior, perception, or motivation, or a combination of these." (11, p. 106)

Added to this broad definition of learning should be an equally broad characterization of learning theory: "A learning theory is a systematic, integrated outlook in regard to the process whereby people relate to their environments in such a way as to enhance their ability to use both themselves and their environments most effectively" (4, p. 221). While all who teach have a theory of learning, not all are able to describe it with precision. Moreover, because psychology is a field of study characterized by a body of theory that is neither internally consistent nor accepted by all psychologists, a variety of schools of thought is possible. The task of practicing teachers, therefore, is not only to clearly understand the psychological theory that guides their daily decisions but also to develop a consistent and systematic theory to avoid a hodgepodge of methods lacking theoretical orientation and perspective. By studying learning theories and the history of their development, teachers can gain insight into the harmonies and conflicts prevailing at the present time. With such insight, they should be able to move toward developing personal theories, theories they can support because of their internal harmony and educational adequacy.

It is well beyond the scope of this small book to review all the major theories of learning. Those interested in such a review will find suggested readings on this topic in the Appendix. Five major types, however — based on an analysis by Bigge and Hunt (4) — will be briefly summarized here.

The first group, the mental discipline theories, although developed prior to the twentieth century, continues to be highly influential in today's schools. Mental discipline means that learning consists of disciplining and training students' minds. Teachers committed to this view instruct to exercise the "muscles" of students' minds — emphasizing memorization; drill; recitation; testing; and strict, external discipline, and encouraging the development of attention, will, and perseverance. Examples of this viewpoint are faculty psychology and classical humanism.

Another pre-twentieth century theory is natural enfolding or self-actualization. This outlook, also a nonexperimental psychology of learning, stems from the theory that people are naturally good and, at the same time, active in relation to their environment. It assumes all people to be free, autonomous, and forwardly active persons reaching out from themselves to make their worlds. Considered the architects of their own lives, students are allowed and expected to learn through the promptings of their own

interests. Self-actualization has no room for the imposition of ideas or standards; coercion and prescription of content or method have no role. Learning and growth are considered natural and proceed in accordance with the individual's needs. Rousseau, Maslow, and Holt are among the proponents of this theory.

A third pre-twentieth century view is that of apperception or Herbartianism. Apperception is idea-centered learning. An idea is apperceived when it appears in one's consciousness and is assimilated to other conscious ideas. Thus, apperception is a process of associating new ideas with old ones. A fundamental premise is that there are no innate ideas; everything a person knows comes from outside. Since there is no substantive mind to be trained, learning cannot be a matter of disciplining or exercising a mind. Rather, learning is the formation of the apperceptive mass that constitutes a mind. Teachers must therefore start with the experiences pupils already have, enlarging and enriching them. They do so by controlling the experiences of the classroom. In this view, teachers are the architects and builders of students' minds and characters.

Twentieth century systematic learning theories may be classified into two broad families: S-R (stimulus-response) associationism and Gestalt or cognitive-field theory. S-R bond, conditioning with no reinforcement, and conditioning through reinforcement are encompassed in the first family. Insight, goal-insight, and cognitive-field theory are examples of the Gestalt-field family, which emphasizes cognition in learning.

For behaviorist or S-R associationist theories, learning is a change in observable behavior. It occurs through stimuli and responses becoming related according to mechanistic principles. Thus it involves the formation of some sort of relations between series of stimuli and reponses. Stimuli, the causes of learning, are environmental agents that act upon an organism either to cause a reponse or to increase the probability of a certain kind of response. Responses, effects, are physical reactions of an organism to external or internal stimulation.

For Gestalt-field theorists, learning is a process of gaining or changing insights, outlooks, expectations, or thought patterns. In thinking about the learning processes of students, these theorists prefer the terms *person* to *organism*, *psychological environment* to *physical or biological environment*, and *interaction* to either *action* or *reaction*. Such choices are not accidental. They feel that the concepts *person*, *psychological environment*, and *interaction* help describe learning processes more clearly. These terms enable a teacher to see a person, his/her environment, and his/her interaction with this environment all occurring at once. This is the meaning of field.

A brief comparison of these two families should be helpful. S-R associationists interpret learning in terms of change in the strength of hypothetical variables such as S-R connections, associations, habit strengths, or behavioral tendencies. Gestalt-field theorists, on the other hand, define learning in terms of reorganization of perceptual or cognitive fields. Consequently, while a behaviorist-oriented teacher desires to change the observable behaviors of students in a significant, measurable way, a Gestalt-field-oriented teacher seeks to help students change their understandings of significant problems and situations (4).

In developing their outlook on learning, then, teachers have a variety of options from which to choose. They may select one of the preceding theories and adhere to it as much as possible. Or they may expand their options by creating an eclectic position of their own, selectively borrowing and combining ideas to form a personal view that is tenable, complete, and consistent. The quality of teaching can only be enhanced when teachers think through the question of the nature of the learning process they want to promote in students.

SIMILARITIES AMONG LEARNERS

To enable teachers to apply the ideas and principles presented in this chapter to a particular grade level, a brief discussion of developmental trends is in order.

Some cautions, however, must precede such a discussion. First, one must remember that predictions of age-level development generally are based on small samples of children; they may not necessarily be characteristic of all children. Further, such estimates are in fact group predictions of average growth and development; they are not meant to be used as individual predictions. Finally, development is a product of the interaction of two major forces: maturation, changes that are primarily the result of growth and are relatively independent of exercise and training; and learning, changes that are primarily the result of experience and environment. As a child becomes older, more changes are due to learning and fewer to maturation. Thus, change is less predictable.

Biehler (3) has described quite clearly the common developmental trends of students, based on the work of Erikson, Piaget, and Bruner. Table 2-2 summarizes these patterns. As you read and study the chart, complete, in your mind at least, the "Implications" column. In other words, if one knows that students at a given age generally exhibit a certain type of characteristic, what does that mean for the teacher of such students? For example, since junior high school students are likely to be moody and unpredictable

due, in part, to biological changes associated with sex maturation and confusion regarding adult roles, does the teacher try to maintain consistency in classroom management despite student inconsistencies? constantly change to meet the needs of the class and individual students? try to obtain a transfer to the senior high? get a refill of his or her Valium prescription?

Table 2-2

Summary of Student Developmental Trends and Implications Activity*

AGE/LEVEL	DOMAIN	CHARACTERISTIC	IMPLICATIONS
Preschool and Kindergarten 3-6 Years	Physical	1. Extremely active, enjoy activity for its own sake.	1.
		2. Need frequent rest periods, don't know when to slow down.	2.
		3. Large muscles more developed than those controlling fingers and hands.	3.
		4. Have difficulty focusing eyes on small objects.	4.
		5. Girls ahead of boys on most aspects of development.	5.
	Social	1. Quite flexible socially; willing to play with most other children.	1.
		2. Play groups tend to be small, not highly organized, and change rapidly.	2.
		3. Quarrels frequent but short and quickly forgotten.	3.
		4. Enjoy dramatic play.	4.
		5. Awareness of sex roles begins.	5.
	Emotional	1. Express emotions freely and openly; anger outbursts frequent.	1.
		2. Have many fears, some irrational.	2.
		3. Jealousy fairly common.	3.
	Mental	1. Skillful with language; like to talk.	1.
		2. Imagination and inventiveness at a peak.	2.

*Based on Biehler (3, pp. 134-99).

Table 2-2 — *Continued*

AGE/LEVEL	DOMAIN	CHARACTERISTIC	IMPLICATIONS
Primary 6-9 Years	Physical	1. Extremely active; energy released in form of nervous habits.	1.
		2. Become fatigued easily.	2.
		3. Large muscle control still superior to fine coordination.	3.
		4. Some still experience difficulty focusing on small print or objects.	4.
		5. Often underestimate danger involved in more daring exploits.	5.
	Social	1. More selective in choice of friends.	1.
		2. Like organized games but may be overly concerned with rules.	2.
		3. Quarrels still frequent; some physical aggression.	3.
		4. Competition becomes noticeable; boasting may be common.	4.
		5. Boys and girls begin to show different interests, although in varying degrees.	5.
	Emotional	1. Become alert to feeling of others; at times use this to hurt others.	1.
		2. Sensitive to criticism and ridicule; have difficulty adjusting to failure.	2.
		3. Eager to please teacher; like to help and assume responsibility.	3.
	Mental	1. Extremely eager to learn.	1.
		2. Like to talk; eager to recite.	2.
		3. Begin to experiment with vulgar language.	3.
		4. Concepts of right and wrong begin to develop.	4.

Table 2-2 — *Continued*

AGE/LEVEL	DOMAIN	CHARACTERISTIC	IMPLICATIONS
Elementary 9–12 Years	Physical	1. Growth spurt occurs; girls taller and heavier than boys of same age.	1.
		2. Girls reach puberty; concern and curiosity about sex almost universal among girls.	2.
		3. Fine motor coordination quite good.	3.
		4. Bone growth not yet complete; can't stand heavy pressure.	4.
		5. Boys forge ahead in strength and endurance.	5.
	Social	1. Peer group becomes powerful, begins to replace adult influence.	1.
		2. Interests of boys and girls become more diverse.	2.
		3. Team games become more popular; class spirit grows stronger.	3.
		4. Crushes and hero worship common.	4.
		5. Begin to question school authority.	5.
		6. School is major setting for social experiences.	6.
		7. Parental influence diminishes outside home.	7.
	Emotional	1. Conflict develops between group code and adult rules.	1.
		2. Begin to take extenuating circumstances into account and become moral relativists.	2.
	Mental	1. Curious about almost everything.	1.
		2. Set unrealistically high standards for themselves; inability to meet standards at times leads to frustration and guilt.	2.
		3. Want to become independent but also want and need adult guidance; causes unpredictable behavior.	3.

Table 2-2 — *Continued*

AGE/LEVEL	DOMAIN	CHARACTERISTIC	IMPLICATIONS
	Physical	1. Girls complete growth spurt; boys' growth continues and may be precipitous.	1.
		2. Puberty reached by almost all; concern with sex almost universal.	2.
		3. Great deal of concern about appearance.	3.
		4. Poor diet and sleeping habits.	4.
		5. Limited physical and mental endurance.	5.
Junior High 12-15 Years	Social	1. Peer group becomes source of general behavior; frequent conflicts between peer and adult codes.	1.
		2. Feel need to conform; cliques common.	2.
		3. Concerned about what others think of them; both friendships and quarrels become more intense.	3.
		4. Girls more advanced socially than boys.	4.
	Emotional	1. Likely to be moody and unpredictable.	1.
		2. May behave boisterously to conceal lack of confidence.	2.
		3. Anger outbursts may be common.	3.
		4. Tend to be intolerant and opinionated; probably due to lack of self-confidence.	4.
		5. Begin to look at parents and teachers more objectively; may be angry that they have been deluded into attributing omniscience to mere mortals.	5.
	Mental	1. Can comprehend abstract concepts to increasing degree.	1.
		2. Better able to understand moral and ethical principles.	2.
		3. Tendency to daydream and detour into fantasy.	3.

Table 2-2 — *Continued*

AGE/LEVEL	DOMAIN	CHARACTERISTIC	IMPLICATIONS
High School 15–18 Years	Physical	1. Most reach physical maturity.	1.
		2. Realization of probability of no further physical changes due to growth may add to self-consciousness	2.
		3. Sexual maturity established; male sex drive at peak.	3.
	Social	1. Peer group dominates lives; conflict between peer and adult codes increases; pressures to conform extreme.	1.
		2. Preoccupied with opposite sex.	2.
		3. Girls still more socially mature than boys.	3.
	Emotional	1. Adolescent revolt expresses change-over from childhood to adulthood.	1.
		2. Increasing independence leads to frequent conflict with parents.	2.
	Mental	1. At close to maximum intellectual efficiency but lack experience.	1.
		2. Realize need to develop philosophy of life but find this threatening.	2.

Table 2-3 provides an additional opportunity to analyze these summary data. Choose the age/grade level with which you are most familiar or with which you are or will be working. Review Table 2-2 for this age group and use this and any other information at your disposal to complete Table 2-3.

Table 2-3
Personal Analysis of Summary Data

	Physical	Social	Emotional	Mental
1. Characteristics which most significantly facilitate instruction.				
2. Characteristics which most significantly hinder instruction.				
3. Characteristics which most significantly facilitate effective classroom management.				
4. Characteristics which most significantly hinder effective classroom management.				
5. Characteristics which are most appreciated in a general sense.				
6. Characteristics which are most frustrating in a general sense.				

DIFFERENCES AMONG LEARNERS

For most of its history, education in the United States has operated according to the policy that schools are the molders of children. In other words, schools existed to prepare the individual for society through conformity. Education was considered something fixed and well defined — a body of information, skills, and attitudes to be learned — and students were considered educated to the extent that they could learn such matter. According to this view, it was the responsibility of children to adapt themselves to the school and its conventions, needs, and interests. Those who were unable or unwilling to do so were considered uneducable.

Starting about fifty years ago, however, this view of education has gradually changed. The general belief has become that schools must teach all students, not just those who are able and willing to benefit from the standard curriculum. Further, it is thought that all students cannot be expected to learn the same things under the same conditions. Thus each child should be helped to develop his/her potential and abilities to the greatest degree, based on an evaluation of individual strengths and limitations.

Because we have "discovered" individuality rather recently, we are just beginning to understand its implications and to implement appropriate programs. Perhaps the recent legislative mandate (P.L. 94-142) to individualize the activities of handicapped children will have a salutary effect on the programs offered for all children.

How are learners different? The list is virtually endless when one considers differences among individual learners. It is formidable even when one enumerates only differences among groups. Among the major sources of difference are heredity, environment, socioeconomic status, intelligence and ability, sex, and personality. It is also possible to list a variety of more precisely defined sources of difference such as previous knowledge of or experience with particular content, learning skill development, interests, needs (social, emotional, physical, psychological, and mental), attitudes, rate of learning, degree of self-motivation, social and emotional development, and cognitive or learning style. A final list of differences to consider are those which set children apart in the "exceptional" category. These include problems due to retardation, physical handicaps, and emotional disturbance; and problems of auditory understanding, visual understanding, inability to concentrate, inability to learn to read, and inability to express oneself verbally or physically.

If teachers are to meet the new U.S. goal of education, to educate all children with respect to their individual strengths and limitations, they must develop an effective personal approach to individualizing instruction. Such an approach should account for these differences by providing variety in the goals and objectives for study, the content considered, the materials and resources employed, the methods and techniques used, the settings of instruction utilized, and the form of evaluation allowed. The process of individualizing should be based on continuing diagnosis, continuing individual and group planning, and continuing evaluation and feedback.

Although it is impossible to consider here in detail all sources of difference, one general source — learning style — has direct relevance for teachers and deserves some elaboration. Gregorc has developed the following

phenomenological definition: "Learning style consists of distinctive behaviors which serve as indicators of how a person learns from and adapts to his environment. It also gives clues as to how a person's mind operates" (14, p. 234). Style, then, is a pervasive quality in the behavior of an individual, a quality that persists even when content is changed.

After more than ten years of research, Dunn and Dunn (8) discovered that selected methods appeared to be extremely effective with some youngsters but produced only minor gains in others. Through a review of the literature and experimentation, they found that "learning style is the manner in which at least eighteen different variables from four basic stimuli affect a person's ability to absorb and retain" (9, p. 3). To these researchers it was apparent that regardless of age, ability, socioeconomic status, or achievement level, individuals respond uniquely to the combinations and variations possible among the elements of their environment. These elements are environmental — sound, light, temperature, and design; emotional — motivation, persistence, responsibility, and structure; sociological — working with peers, alone, in pairs, in teams, with adults, or in varied combinations; and physical — perceptual strengths, intake, time of day, and mobility. Further, the Dunns developed the *Learning Style Inventory* (LSI) to identify individual learning preferences for students in grades 3 through 12. The LSI uses dichotomous items and can be completed in approximately 30 minutes. Some sample items are as follows: "I study best when it is quiet," "I try to finish what I start," "I like to study by myself," and "When I can, I do my homework in the afternoon" (9). The LSI is a source of interesting diagnostic information, particularly for younger students.

Another research team, Fischer and Fischer (10), has developed a list of 10 learning styles based on direct observation and experience and enriched by fruitful discussions with sensitive and competent teachers. A summary follows.

1. *The Incremental Learner* — proceeds in a step-by-step fashion, systematically adding bits and pieces together to gain larger understandings.
2. *The Intuitive Learner* — gathers information unsystematically, using leaps in various directions and sudden insights to arrive at meaningful and accurate generalization.
3. *The Sensory Specialist* — relies primarily on one sense, usually visual or auditory, for the meaningful formulation of ideas.
4. *The Sensory Generalist* — uses all or many of the senses in gathering information and gaining insights.

5. *The Emotionally Involved* — functions best in a classroom that is an emotionally colorful and vivid learning atmosphere or an emotionally active one in which active, open discussions occur.
6. *The Emotionally Neutral* — functions best in a classroom where the emotional tone is low-keyed and relatively neutral.
7. *The Explicitly Structured* — learns best when the teacher makes explicit a clear and unambiguous structure for learning.
8. *The Open-Ended Structured* — feels at home and learns best when the learning environment is fairly open-ended.
9. *The Damaged Learner* — is damaged in self-concept, social competency, aesthetic sensitivity, or intellect in such a way that he or she develops negative learning styles which are superimposed on otherwise identifiable learning styles.
10. *The Eclectic Learner* — shifts learning styles; may find one or another style more beneficial but can adapt to and benefit from others. (10)

At least brief mention should be made of another system for analyzing student learning style. Through their *Student Learning Styles Questionnaire*, Grasha (13) and Riechmann and Grasha (27) suggest that the following six learning styles can be isolated:

1. *Independent* — likes to think for himself or herself; prefers to work on own, but will listen to ideas of others; learns content he or she feels is important; is confident in learning abilities.
2. *Dependent* — shows little intellectual curiosity and learns only what is required; sees teacher and peers as sources of structure and support; looks to authority figures for guidelines and wants to be told what to do.
3. *Participant* — wants to learn course content and likes to go to class; takes responsibility for getting the most out of class and participates with others; takes part in class-related activities but does little that is not part of course outline.
4. *Avoidant* — not interested in learning course content in the traditional classroom; does not participate in the classroom; is uninterested or overwhelmed by what goes on in classes.
5. *Collaborative* — feels he or she can learn most by sharing ideas and talents; cooperates and likes to work with others; sees classroom as a place for social interaction as well as content learning.

6. *Competitive*—learns material in order to perform better than others in the class; competes with other students for the rewards of the classroom; views classroom as a win-lose situation where he or she must always win. (Summary based on Bergquist and Phillips [2])

When used as part of a systematic program of diagnosis which includes the use of existing records, informal questionnaires and inventories, sociometric techniques, systematic and informal observation, and referral and consultation services, these techniques or schemes for assessing and analyzing individual learning styles provide an opportunity for the teacher to better understand all the learners in his or her classroom.

MOTIVATION

Why some pupils seem to have a greater desire to learn than others is a question that has troubled teachers over the years. In their search for ways to arouse the interest of students, to motivate, teachers have developed a variety of techniques. Interpretations of motivation, however, reflect differences between two major viewpoints on approaches to teaching and learning. These are based on the ideas of two philosophers, John Locke and Gottfried Leibnitz. Again, Biehler's (3) description of these differences is perceptive and a summary follows.

Locke argued that the mind of a newborn child is a "tabula rasa," or blank slate, on which sensations, experiences, and associations make their mark. He saw human beings as essentially passive organisms that react only when stimulated. The behaviorist-associationist-environmentalist view of learning, then, is based on five presuppositions derived from this Lockean view: (1) what is external and visible is of primary importance; (2) learning is the substitution of one effective stimulus for another or of one response for another; (3) what is small and relates to the parts is of greater concern than what is large and pertains to the whole; (4) animals and humans are basically equivalent; and (5) what comes earlier in development is more fundamental than what comes later. Proponents of this position study motivation by analyzing observable behavior, attempting to trace associations built up between stimuli and responses, concentrating on specific reactions, doing much of their research on animals, and emphasizing the importance of early experiences. The behaviorist-associationist view of motivation thus places great emphasis on external behavior and on the ways in which

responses are reinforced. For example, if a teacher experiences problems in encouraging students to learn, the behaviorist-associationist is likely to attribute this to conditions that have been arranged improperly or to reinforcement that has not been supplied advantageously.

Leibnitz, on the other hand, argued that human beings are not passive, blank slates but are self-propelled and perpetually active in manipulating what they sense and experience according to their own inherent nature. Thus, the person is seen not as a collection of acts but as the source of acts, and activity is seen not as the result of stimulation but as purposive. In this view, Locke's five presuppositions are reversed: (1) what happens on the inside (not the outside) is of primary importance; (2) learning is regarded as the perception of new relationships (not the accumulation of associations); (3) understanding of structure, of the whole, is essential (not what is small and molecular); (4) higher-order animals and humans are different from lower-order animals (species are not equivalent); and (5) present experiences (not past experiences) are of primary importance. This point of view, therefore, is the foundation of Gestalt psychology and cognitive-field theory. Proponents are bothered by the assumption that student motivation requires rewards for specific actions. Instead, advocates of the natural view of development and the discovery approach stress that learning activity should be — and can be — its own reward (3).

A consideration of the basic differences between the Lockean and Leibnitzian views, then, can help teachers understand the differences in systematic approaches to motivation. They can use the well-known approach of Skinner and other adherents of the S-R associationist viewpoint as one base for decisions and plans concerning motivation. In other words, through careful control and manipulation of the learning environment and through use of appropriate reinforcements, teachers can arouse and sustain interest in learning. Some, however, question the desirability and long-term effects of such techniques, feeling that they place too much emphasis on control, manipulation, and Machiavellian power; that they limit rather than enhance learning; and that they ignore important differences between animal and human behavior.

Motivation theory based on the Leibnitzian view uses the gratification of a hierarchy of student needs defined by Maslow (20) to arouse and sustain learning. According to this view, when a person's lower "deficiency" needs (physiological, safety, belongingness and love, and esteem) are satisfied, he or she will feel motivated to satisfy the higher "being" needs (self-actualization, knowing and understanding, and aesthetic) — not because of a deficit but because of a desire to gratify the higher needs. Because it is assumed that the child will choose wisely if given the chance,

the basic approach to education involves arranging attractive learning situations so that students can select activities with personal appeal or value. Instead of the teacher supplying reinforcement, the child's self-chosen activity becomes its own reward. Critics of extreme interpretations of the Leibnitzian view as applied to motivation describe such approaches as permissive and romantic. They feel that the lack of guidance possible in such approaches will leave students entirely at the mercy of chance, resulting in a disorganized sharing of ignorance.

Classroom teachers, then, can make a choice. They can follow one or the other view or can make use of techniques practiced by both camps. In any case, it is important to keep in mind the assumptions underlying each point of view. As Biehler points out, "You might strive to function as a Machiavellian romantic — or, if you prefer, a romantic Machiavellian" (3).

CHAPTER 3
THE TEACHER

MODELS OF TEACHING

In their choice of a title for their vividly written book, Pullias and Young (26) have summarized a message good teachers have conveyed to their charges for many years — *A Teacher Is Many Things*. Teachers are, after all, required to engage in many professional roles, often simultaneously. No single aspect is the essence or the whole of the teaching and learning process. A sense of the multiplexity of teacher roles can be gained by completing Table 3-1 which follows. It is also hoped that this activity will provide an opportunity for each teacher to analyze the personal and unique combination of roles that leads to the creation of her/his teaching self.

Table 3-1
Roles of the Teacher*

Directions: Circle the number indicating the relative emphasis that you place on each of the following teaching roles.

	Little Emphasis				Much Emphasis
1. A guide — leads students on the learning journey.	1	2	3	4	5
2. A teacher — helps students learn things they do not know and understand what they learn.	1	2	3	4	5
3. A modernizer — translates experience into terms that have meaning for students; bridges the gap between generations for students.	1	2	3	4	5
4. A model — is an example for students.	1	2	3	4	5
5. A searcher — constantly seeks to understand what he/she doesn't know.	1	2	3	4	5
6. A counselor — acts as confidant and friend to students.	1	2	3	4	5
7. A creator — demonstrates and releases the creative process.	1	2	3	4	5
8. An authority — knows more than those who share the learning journey.	1	2	3	4	5

*Based on Pullias and Young (26).

Table 3-1—*Continued*

	Little Emphasis				Much Emphasis
9. An inspirer of vision — releases and develops what is in the learner.	1	2	3	4	5
10. A doer of routine — handles routine tasks attentively and efficiently.	1	2	3	4	5
11. A breaker of camp — helps learners leave the old in order to experience the new.	1	2	3	4	5
12. A storyteller — uses human sound to restore life to learning.	1	2	3	4	5
13. An actor — performs in the artificiality known as the classroom.	1	2	3	4	5
14. A scene designer — creates a setting and mood for learning.	1	2	3	4	5
15. A builder of community — works with and in the community.	1	2	3	4	5
16. A learner — learns and grows with his/her students.	1	2	3	4	5
17. A facer of reality — accepts students with their strengths and weaknesses and places their attributes in proper perspective.	1	2	3	4	5
18. An emancipator — frees students from unfortunate self-images, from ignorances, and from feelings of rejection and inferiority.	1	2	3	4	5
19. An evaluator — constantly evaluates the speed and direction of students' learning and his/her teaching.	1	2	3	4	5
20. A conserver — helps students remain patient in less important situations in order to be effective in more important situations.	1	2	3	4	5
21. A culminator — brings focus to the process of learning by providing a sense of completion and achievement.	1	2	3	4	5
22. A person — is a growing human being.	1	2	3	4	5

Among many other roles, then, teachers are advisors, facilitators, instructional managers, curriculum designers, disciplinarians, academic instructors, and evaluators of instruction. They seek alternative methods to fulfill their duties as teachers and try to expand their ways to be meaningful to students. Drawing upon a variety of teaching models in order to combine these roles in a program that is enlightened, inspired, consistent, efficient, and effective, they master a repertoire of teaching approaches to use in carrying out the roles.

Different roles require different teaching strategies. In their three-volume *Models of Teaching* series, Weil and Joyce describe a number of models which incorporate teaching strategies based on defendable theories of human learning, growth, and development. According to their definition, "A model of teaching consists of guidelines for designing educational activities and environments. It specifies ways of teaching and learning that are intended to achieve certain kinds of goals" (31, p. 3). The authors group the models on the basis of their chief emphases — the ways they approach educational goals and means — and organize them into four families.

1. *Social Interaction Models.* These emphasize the relationships of the individual to society or other persons and focus on the processes by which reality is socially negotiated. Models from this orientation give priority to the improvement of the individual's ability to relate to others, the improvement of democratic processes, and the improvement of society but also are concerned with the development of the mind and self and the learning of academic subjects. The Role Playing Model, the Jurisprudential Model, and the Simulation Model are examples. (32, pp. 3 and 22)
2. *Information Processing Models.* These share an orientation toward the information processing capability of students and toward the systems that can improve their information processing capability. Information processing refers to the ways people handle stimuli from the environment, organize data, sense problems, generate concepts and solutions to problems, and employ verbal and nonverbal symbols. While these models share an emphasis on intellectual development, they are also concerned with social relationships and the development of an integrated, functioning self. The Concept Attainment Model, the Advance Organizer Model, and Inquiry Training Model are included in this family. (31, pp. 3 and 21–22)
3. *Personal Models.* These share an orientation toward the individual and the development of selfhood. They emphasize the processes by which individuals construct and organize their unique reality. They focus on the emotional life of individuals and on helping individuals develop a productive relationship with their environment. Examples of this family are Synectics and Nondirective Teaching. (33, pp. 3 and 22)
4. *Behavior Modification Models.* These evolved from attempts to develop efficient systems for sequencing learning tasks and shaping behavior by manipulating reinforcement. They emphasize

changing the external behavior of learners and describe learning in terms of visible behavior rather than underlying and unobservable behavior. (31, pp. 3–4)

While some philosophies of teacher education maintain that a teacher should master a single model and use it well, Weil and Joyce believe that very few teachers are so limited in capacity. Instead, they suggest that most can easily develop six or more models to use in carrying out their variety of roles: "Growth in teaching is the increased mastery of a variety of models of teaching and the ability to use them effectively" (31, p. 4).

CONTEXTS AND ORIENTATION OF TEACHING

The environment in which the teaching and learning process takes place is also a variable controlled by the teacher. In an effort to help instructors understand the range of choices available, Bergquist and Phillips (2) have established a useful framework for classifying styles of educational environments. The following is a summary of the six styles they define:

1. *Teacher-oriented environments.* In these traditional classroom settings, seats generally face toward the front of the room where a teacher is routinely behind or beside a table or lectern. At times, seats may be permanently fixed.
2. *Automated environments.* These settings use instructional technologies, including audio-tutorial instruction, programmed instruction, computer-assisted instruction, educational television, teaching machines, and so forth. Room design matches its use.
3. *Interaction-oriented environments.* Seminar settings, where students and teacher(s) face each other or where chairs are arranged in circular fashion or are located around a table, are typical of this style of environment. The setting here may be quite informal.
4. *Student-oriented environments.* Through independent study, contract learning, and the like, students learn in what is usually a nonclassroom setting. Students make use of libraries, museums, lounges, study areas, their homes, and so forth.
5. *Sheltered experience-oriented environments.* This style uses simulated experiences, such as games, role plays, and instructional simulations. Examples include laboratory experiences, apprenticeships, practicum experiences, and workshops.
6. *Experience-oriented environments.* Activities common to this style include field experiences, on-the-job experiences, work-study programs, internships, academic credit for life experiences. They take place in nonclassroom settings. (2, p. 17)

Table 3-2 provides the opportunity to rate your use of each of these six styles of educational environments in order to determine which styles receive emphasis in your teaching.

Table 3-2
Styles of Educational Environments

Directions: Circle the number indicating the relative amount of time you devote to teaching in each environment.

	Little Time				Much Time
1. Teacher-oriented environments	1	2	3	4	5
2. Automated environments	1	2	3	4	5
3. Interaction-oriented environments	1	2	3	4	5
4. Student-oriented environments	1	2	3	4	5
5. Sheltered experience-oriented environments	1	2	3	4	5
6. Experience-oriented environments	1	2	3	4	5

TEACHING STYLES

Just as learners have their own styles, their own set of distinctive behaviors which serve as indicators of how they learn from and adapt to their environment, so do teachers have their distinctive teaching styles. Mann (19) has defined six different teaching styles which Bergquist and Phillips later developed into an instrument. They are summarized as part of the activity included in Table 3-3. Completion of this activity should help you identify the characteristics of your own personal style.

Table 3-3
Teaching Typology*

Directions: Circle the number that best characterizes your use of each style.

	Unlike Me				Like Me
1. Expert: I see myself as a subject matter expert, and I define my classroom role largely as an information-giver. My professional background has made me more knowledgeable in certain areas than most people, and I think students like to be in my classes because they want to learn as much as they can from me.	1	2	3	4	5

*Adapted from Bergquist and Phillips (2, p. 22).

Table 3-3 — *Continued*

	Unlike Me				Like Me
2. *Formal Authority.* I expect work to be handed in on time, and I insist that it be in the correct form. I make the rules for my classes and expect my students to follow them. Because we are evaluated all our lives in whatever we do, students might as well get used to it. I like to be in control when I am teaching.	1	2	3	4	5
3. *Socializing Agent.* Many of my students develop quite an interest in my field and later go on to pursue college studies in this discipline. Whenever my best students do that, I feel great satisfaction. I am constantly on the alert for promising students. You might say that I see myself as a gatekeeper, a recruiter for my field.	1	2	3	4	5
4. *Facilitator.* I think my job is to respond to the learning goals of my students, even where their goals and mine are quite different. I do not feel comfortable telling students what they should learn. I believe in taking students on their own terms, so I do a lot of listening and questioning. I want to enable students to learn what they think is worth learning.	1	2	3	4	5
5. *Ego Ideal.* Students look up to me, not so much as an expert in my discipline but as a model for living. I suppose it has something to do with my energy and enthusiasm for what I am doing. Students may not remember everything I have said, but when the course is over, I think they have been inspired to find something that is as liberating and exciting for them as my work is for me.	1	2	3	4	5
6. *Person.* I learn as much from students as they learn from me. Teaching is a dynamic social system, and students and faculty should learn from each other. I teach because I value personal growth, my own as well as others. I try to create an atmosphere of trust and openness in my courses, and I have no qualms about talking about my own feelings and experiences, even nonacademic ones. I want students to know that I exist beyond the classroom as well as in it.	1	2	3	4	5

PERSONAL FACTORS

While researchers are still trying to determine exactly which teaching behaviors make a difference in student learning, especially as related to student performance, the utility of some basic teaching behaviors in promoting growth in learners generally has been validated. For the present at least, these behaviors provide a reasonable yardstick for evaluating teaching effectiveness (23).

Some of these teacher behaviors are the direct product of preparation for and instruction in teaching. For example, a prospective teacher's expert knowledge of his/her subject and ability to present such content with clarity can be measured objectively and with some precision. Other behaviors, though more difficult to develop and assess, also lend themselves to this more scientific approach to teacher education. In other words, it is possible to help the pre-service or in-service teacher develop the ability to communicate effectively, to ask better questions, to listen carefully, to motivate consistently, and to use indirect teaching techniques — and to evaluate these skills fairly.

Other teacher behaviors fit less neatly into this scientific and objective model. Research, for example, indicates that a "good" teacher is enthusiastic, warm and sensitive, and flexible. While it is possible to list behaviors which describe enthusiastic, warm, or flexible teaching and while it is reasonable and desirable to attempt to develop these skills in teachers, it is not necessarily possible, reasonable, or desirable to force another human being to bend his/her personality and attitudes to meet any particular model or style.

Personality and attitude are important, however. Although no single combination of knowledge, skills, and personal forces is required, some combinations are clearly more effective than others. It is the responsibility of the individual teacher to develop that effective personal combination. It is the responsibility of pre-service and in-service teacher educators to assist in that search for growth.

CHAPTER 4
INSTRUCTIONAL CONTENT

This chapter will discuss a third element of the teaching and learning process, the content of courses. Because this topic receives a great deal of attention in teacher education programs, it will receive only a brief review. The information, however, is organized and presented so as to stimulate recall of already-learned material and to provide new ways of organizing this material.

STYLES OF INSTRUCTIONAL CONTENT

Most pre-service and in-service teachers are probably quite familiar with the classification scheme developed more than 20 years ago by a small group of researchers working under the direction of Benjamin Bloom. The scheme describes three "domains" of learning: (1) *the cognitive domain* — concerned with the acquisition and manipulation of factual information; (2) *the affective domain* — concerned with such things as emotions, traits, attitudes, reactions, values, and moral judgments; and (3) *the psychomotor domain* — concerned with the development of physiological skills (5).

Bergquist and Phillips (2) have suggested a slightly different way of organizing the domains of teaching and learning, one particularly useful for instructors of secondary and older students. Their scheme describes various styles of instructional content in terms of three relatively independent categories. Table 4-1 describes the categories as part of the activity. Completion of this activity should help you understand the categories and will provide the opportunity to rate your use of them. Subsequent sections of this chapter contain brief analyses of each style.

Table 4-1
Styles of Instructional Content*

Directions: Circle the number indicating the relative emphasis that you place on each of the following content orientations.

	Little Emphasis				Much Emphasis
1. *Cognitively Oriented Content*. This kind of content is primarily related to the acquisition of new information or the reorganization of existing information. Cognitive content is usually conveyed by means of a lecture, classroom discussion, reading, or various technological means such as television, audio-tutorial, and programmed instruction. Cognitive acquisition is usually measured by means of objective tests, papers, or highly structured interviews.	1	2	3	4	5
2. *Skills-Oriented Content*. Courses with this content orientation are concerned with effective performance of specific tasks. Skills-oriented content is usually conveyed by means of lecturing, modeling, practice, and immediate feedback. The acquisition of these skills can be rather easily assessed by means of performance tests which measure speed, accuracy, endurance, and so forth.	1	2	3	4	5
3. *Affectively Oriented Content*. This content is related to an increased understanding of and, in some instances, control over the subjective aspects of one's personal life (such as emotions, attitudes, values, self-images, and fantasies). Affective content is usually conveyed by means of personal experiences that are either spontaneous, as in some fieldwork, or planned, as in simulations and certain kinds of group activities. The acquisition of affective content is difficult to measure, though it is usually assessed through more or less subjective means, such as interviews, diaries, and essay examinations.	1	2	3	4	5

*Based on Bergquist and Phillips (2, pp. 15–17).

COGNITIVELY ORIENTED CONTENT

Most classrooms tend to be oriented toward cognitive learning. The inclination of teachers to accept this traditional role as a primary focus of their teaching does not, however, eliminate the need for careful and thoughtful planning. A major task remains — the selection and organization of the subject matter to be taught. The vast amount of important information

from which to choose makes this a difficult problem. Although teacher choices are narrowed somewhat by the nature of the curriculum set by the school or district, much freedom and/or flexibility are nonetheless generally available. Further, these teacher decisions can have great impact on student interest and motivation.

A first step toward solving this problem is to select and order topics that make up a course outline. It is important to avoid selecting both too many or too few topics. In the former case, development may be too limited and superficial; in the latter, the year's work may be too narrow and limited in scope. It is also important to choose certain content over other content carefully and purposefully. One's rationale for curricular decisions must be clear, based on goals and objectives set for the course, preferred teaching and learning styles of those in the classroom, and philosophical and pedagogical needs. In short, such decisions involve many personal considerations.

A second important step is to select the kinds of subject matter to be emphasized. Some would suggest this is a matter easily settled since it is the teacher's role to help students learn the "facts" — those testable propositions or statements whose truth is contingent upon the presence of empirical evidence with which any disinterested or impartial observer would agree and whose truth or falsity can be tested by anyone desiring to do so (11). It is impossible, however, to teach all available facts, even on any one topic. Fraenkel suggests that what we need is a viable method of selecting information that will have maximum educational value. Further, he proposes:

> Students need to acquire as much factual information as their individual capabilities permit, since facts are the building blocks of knowledge. It is impossible to make sense out of the world without facts, since they tell us something . . . about occurrences, incidents, events, or individuals which exist today, or have existed in the past. But students must also learn how to tie together the facts they acquire into meaningful *relationships* of various sorts that will help them understand and explain more fully some part of their personal or social existence.
>
> Thus, if you wish to help students understand themselves and their world more completely, you must go beyond helping students learn facts. You must also help them acquire knowledge that is more widely applicable to other people, other times, and other places — in short, you must help them to acquire concepts and generalizations. (11, p. 57)

Unlike facts, concepts are definitional in nature. They are categories that represent characteristics common to several events, objects, or individuals. They are invented, symbolic mental constructions that attempt to give order to reality. Concepts, further, have many uses and effects. DeCecco and Crawford (7) suggest the following:

1. Concepts help us to deal with the tremendous complexity of our environment and to reduce it to manageable proportions by classifying objects, events, ideas, or individuals.
2. Concepts help us to identify and make sense out of the various objects we find around us.
3. Concepts reduce the necessity for continual relearning since concepts can be applied to a large number of examples.
4. Concepts help in solving problems because objects are placed in understandable categories.
5. Concepts make more complicated instruction and explanation possible.
6. Concepts can be stereotypes, implying several characteristics.
7. Concepts represent our picture of reality and thus describe our world for us. (From Fraenkel's summary [11, pp.64–68])

Concepts, therefore, are an efficient and powerful tool for treating content in the classroom.

While concepts in part classify relationships among facts, generalizations express relationships among concepts. Like facts, generalizations can be supported or refuted via observable evidence and offer insights into the way the world works. They are aids to thinking and understanding by describing data, but they also give structure to information. The more facts to be found to support the relationships described in a generalization, the more warranted the generalization is considered to be. Key generalizations are important tools in all content areas for all levels.

To complete this section, at least brief mention should be made of the six major categories of the cognitive domain developed by Bloom and associates (5):

1. *Knowledge* — the ability to remember previously learned material.
2. *Comprehension* — the ability to grasp the meaning of material.
3. *Application* — the ability to use learned material in new and concrete situations.

4. *Analysis* — the ability to break down material into its component parts in order to understand its organizational structure.
5. *Synthesis* — the ability to put parts together to form a new whole.
6. *Evaluation* — the ability to judge the value of material for a given purpose.

These major categories, as well as their many subcategories, serve to give direction to teachers seeking to present cognitively oriented content.

SKILLS-ORIENTED CONTENT

Teachers attempt to develop a variety of types of skills in their classrooms. While our working definition of skills-oriented content is fairly limited — that is, it seems to focus on fairly rudimentary performance-oriented skills — this section will discuss four broader groups: academic skills, research skills, thinking skills, and psychomotor skills. The final section of the chapter will treat social skills.

Skills allow us to use knowledge or information that has been acquired. Certain academic skills are crucial in any classroom. Such abilities include reading, writing, speaking, viewing, listening, reading and interpreting maps, outlining, graphing, charting, and note-taking. While teachers can test students to determine the possession of such skills, they are more likely to note their absence when asking students to complete tasks calling for their use.

Research skills, which constitute the second group, are also conspicuous when absent. Included in this group are the following abilities: to define problems, to formulate reasonable hypotheses, to locate and gather relevant data, to analyze data, to evaluate hypotheses in light of these data, and to draw conclusions. Those familiar with the inquiry method or the scientific method will recognize the list. Those who have tried to help students develop such abilities will probably agree that much time, attention, and effort are required for students to master them.

The third group, thinking skills, includes such abilities as describing, defining, classifying, hypothesizing, generalizing, predicting, comparing and contrasting, and offering new ideas. Developing these skills — helping students mentally try to make sense of their world — is another task most educators assume. Four different types or forms of thinking can be identified:

1. *Convergent thinking* — occurs when individuals organize their ideas so that they converge or point toward one logically correct answer.

2. *Divergent thinking* — occurs when there is no one right answer and many equally acceptable and correct answers are possible.
3. *Critical thinking* — occurs when individuals try to make an intelligent and reasoned judgment as to which of two or more alternatives is better, using some type of criteria.
4. *Creative thinking* — occurs when individuals attempt to originate a new idea not bound by logic or any other restriction. (11)

All these skills and types of thinking are closely interrelated; they are not separate and distinct forms of mental activity. Further, they can be used to make sense out of information drawn from all three domains of learning. Each, therefore, seems to demand a place in the teacher's instructional planning.

The final group, psychomotor skills, deals with the physical development of students. Harrow (16) has organized the psychomotor domain into six major levels, each divided into subcategories and divisions. Through guided practice and corrective feedback, learners progress from relatively gross bodily movements to highly refined, complex, and creative-expressive movements. Although emphasized more heavily with younger or handicapped students and in certain subject areas, the development of such skills has a place in all classrooms. The following is a summary of Harrow's major levels:

1. *Reflex movements* — actions elicited without conscious volition in response to some stimuli.
2. *Basic fundamental movements* — inherent movement patterns formed from a combining of reflex movements, the basis for complex skilled movement.
3. *Perceptual abilities* — interpretation of stimuli from various modalities providing data for learners to make adjustments to their environments.
4. *Physical abilities* — functional characteristics of organic vigor essential to the development of highly skilled movement.
5. *Skilled movements* — a degree of efficiency when performing complex movement tasks which are based upon inherent movement patterns.
6. *Nondiscursive* — communication through bodily movement ranging from facial expressions through sophisticated choreographies. (11)

AFFECTIVELY ORIENTED CONTENT

Dealing with affectively oriented content is not a new phenomenon in American education. For years, with varying degrees of emphasis — and success — teachers have tried to help students develop "appropriate" attitudes, values, and social skills. Moreover, whether planned or incidental to other learning experiences, students' daily school activities help shape their emotions, attitudes, feelings, and values. For this reason, teachers are increasingly attempting to identify elements of the affective domain and to improve student understanding and achievement of selected affective objectives.

Krathwohl (18) has described five major categories or levels in this domain. As with the levels of the cognitive and psychomotor domains, the categories are hierarchical in organization so that each category is subsumed by those following. The following is a summary with examples of these categories:

1. *Receiving* — refers to student willingness to attend to particular phenomena or stimuli; e.g., listening attentively, showing sensitivity to human needs.
2. *Responding* — refers to active student participation; e.g., completing assigned work, volunteering for tasks.
3. *Valuing* — concerned with the worth or value students attach to a particular object, phenomenon, or behavior; e.g., appreciating good literature, demonstrating belief in the democratic process.
4. *Organizing* — concerned with bringing together different values, resolving conflicts between them, and beginning the building of an internally consistent value system; e.g., accepting responsibility for individual behavior, recognizing the need for balance between freedom and responsibility.
5. *Characterizing by a value or value complex* — having a value system that controls behavior for a sufficiently long time for one to have developed a characteristic "lifestyle"; e.g., practicing cooperation in group activities, demonstrating self-reliance in working independently. (15)

Through modeling, values inculcation, values clarification, values analysis, values neutrality, and the use of moral dilemmas, teachers attempt to foster the affective growth of students.

Finally, as you may remember, the discussion of one type of skill development was also reserved for this section. Among the abilities students

must develop in order to understand and control their personal life are social skills, including cooperating harmoniously with others, contributing productively to group tasks and discussions, working jointly with others, picking up on nonverbal cues given by others, responding helpfully to others' problems, reinforcing another person's strengths; dealing effectively with interpersonal conflict; and supplying leadership when and if necessary and appropriate (11, pp. 9–10). Because these social skills play such a crucial role in the creation of a positive classroom climate, even the busiest content specialist cannot overlook them. Plans for their development clearly deserve a place in the teaching and learning process as well.

CHAPTER 5
INSTRUCTION

PURPOSES OF INSTRUCTION

The debate over the role and purpose of education in society has been long and ardent. Educational philosophers have helped give direction to this discussion by applying formal philosophy to the field of education and by seeking to comprehend education in its entirety, interpreting it by means of general concepts to guide our choices of educational ends and policies. A brief review of these analyses of contemporary education should therefore be helpful in understanding the options available to pre-service and in-service teachers as they organize for instruction.

Educational philosophy serves a variety of needs. As it searches for order and wholeness in establishing theories of the nature of humankind, society, and the world, it is speculative. As it examines the rationality of ideas, investigates inconsistencies in thinking, and defines and clarifies words and meanings, it is analytical. Of most importance to the classroom teacher, however, is its prescriptive nature. As it specifies the ends of education and the general means to attain them, it discovers and recommends principles for deciding what actions and qualities, chosen from a broad range of alternatives, are most worthwhile and why. Once the various options are known, it is the responsibility of the classroom teacher to choose among them.

Teachers need not, however, begin to develop their personal philosophy of education — to make their decision regarding these ends and means — unaided. Five contemporary educational viewpoints — Perennialism, Essentialism, Progressivism, Reconstructionism, and Existentialism — describe common patterns of organization. Flowing from the more formal philosophies, these viewpoints take on special character because they are largely conditioned by experiences unique to education. Thus they offer classroom teachers practical and meaningful guidelines. Table 5-1 provides an activity that you can use to begin to sift through the tenets of these five viewpoints.

Table 5-1

Contemporary Educational Viewpoints Inventory*

Directions: Mark the response that best explains your reactions to each statement. Mark *SA* if you strongly agree, *A* if you moderately agree, *U* if you are undecided, *D* if you moderately disagree, and *SD* if you strongly disagree.

	SA	A	U	D	SD
1. Despite differing environments, human nature remains the same everywhere; hence education should be the same for everyone.	___	___	___	___	___
2. It is the educator's task to impart knowledge of eternal truth.	___	___	___	___	___
3. Education is not an imitation of life, but a preparation for it.	___	___	___	___	___
4. Students should study the great works of literature, philosophy, history, and science in which humans through the ages have revealed their greatest aspirations and achievements.	___	___	___	___	___
5. Learning, of its very nature, involves hard work and often unwilling application.	___	___	___	___	___
6. The initiative in education should be with the teacher rather than the pupil.	___	___	___	___	___
7. The heart of the educational process is the assimilation of prescribed subject matter.	___	___	___	___	___
8. The school should retain traditional methods of mental discipline.	___	___	___	___	___
9. Education is always in the process of development and must be ready to modify methods and policies in light of new knowledge and changes in the environment.	___	___	___	___	___
10. Education should be life itself, not a preparation for living.	___	___	___	___	___
11. Learning should be directly related to the interests of the child.	___	___	___	___	___
12. Learning through problem solving should take precedence over inculcating subject matter.	___	___	___	___	___
13. The teacher's role is not to direct, but to advise.	___	___	___	___	___
14. Education must commit itself to the creation of a new social order that will fulfill the basic values of our culture and at the same time harmonize with the underlying social and economic forces of the modern world.	___	___	___	___	___
15. The child, the school, and education itself are conditioned inexorably by social and cultural forces.	___	___	___	___	___

*Based on Johnson, et al. (17)

Table 5-1 — Continued

	SA	A	U	D	SD
16. The means and ends of education must be completely refashioned to meet the demands of the present cultural crisis and to accord with the findings of the behavioral sciences.	___	___	___	___	___
17. Education should emphasize deep personal reflection on one's commitments and choices.	___	___	___	___	___
18. By the choices we make, we create a personal definition. We are what we choose to be. Education should allow and support this.	___	___	___	___	___
19. While we live in a world of physical realities and while we have developed useful and scientific knowledge about these realities, the most significant aspects of our lives are personal and nonscientific.	___	___	___	___	___
20. Teaching methods should focus on a questioning process aimed at encouraging self-definition.	___	___	___	___	___

Statements 1 through 4 reflect beliefs consistent with the Perennialist viewpoint. Perennialists call for allegiance to absolute principles and feel that permanence is more real and more desirable than change. They believe that the aim of education in every age and in every society should be to impart knowledge of eternal truth, the knowledge found in the study of the "great works." In this view, the teacher's job is to cultivate students' rationality and desire for learning through external discipline and control.

Statements 5 through 8 summarize Essentialist beliefs. According to this view, schools exist to conserve our heritage and transmit knowledge of the physical world. This view emphasizes traditional, prescribed subject matter, learned systematically and completely, and traditional methods of mental discipline, enforced by a teacher who wields great authority. A reduced attention to "intellectual" education, a willingness to use knowledge to help students adjust to the contemporary world, and a more diverse, less elite, conceptualization of the goals of education distinguish Essentialism from Perennialism.

Statements 9 through 13 present some of the major benefits of the Progressive viewpoint. In this view, education is a dynamic process, constantly changing to meet the needs of the contemporary scene. Teachers of less authoritarian bent lead students to interpret their real experiences. Through problem solving and other process- and skill-focused strategies employed in a

setting stressing cooperation rather than competition, students have some choice in what they must learn. Thus they strive to learn because they need and want to learn, not because someone else thinks they should.

Statements 14 through 16 summarize Reconstructionist beliefs. Following Progressive methods, Reconstructionists seek to use the schools to build a new and more equitable society. Accordingly, teachers of this view attempt to convince students of the validity and urgency of the Reconstructionist solution, but they do so with scrupulous regard for democratic principles.

Finally, statements 17 through 20 recount key educational beliefs of Existentialism. Less a formal philosophy or viewpoint than a systematic way of examining life in a personal manner, Existentialism is concerned with the individual and his/her control over his/her destiny. Because of heavy emphasis on self-definition through "authentic" choices, proponents advocate a curriculum of experiences and subjects that lend themselves to philosophic dialogue, conscious analysis, and thoughtful choice-making. The teacher's role in this view is necessarily nondirective (17).

While these fairly traditional classifications may be quite helpful for defining a personal view of the nature and purpose of education, other approaches to this task are possible. For example, Searles (29) has proposed a particularly insightful scheme to analyze and classify the purposes of instruction. Table 5-2 (on p. 52) includes elements of his Five Searches for Teaching and Learning.

Searles suggests two possible Latin roots for the word "education."

> Some say the word derives from "educare" which means "to mold"; others say the derivation is from "educere" which means to "lead out." The difference to school and instruction is obvious . . . . Examination of the various schools about schooling shows a continuum of choices for searches bound by the poles of "molding" on the one hand and "leading out" on the other. Because of the connotations therein, the one pole could be called society-centered, the other self-centered. (29, p. 5)

Along the continuum stretching between these two poles, Searles describes five searches. The first two statements of the activity in Table 5-2 reflect views consistent with the first of these searches, the search for conformity. Those who believe in this search emphasize the need for students to "fit," to live according to society's rules. The curriculum and teaching methods would be chosen to reflect this need to prepare students for society through conformity.

Table 5-2

Five Searches for Teaching and Learning*

Directions: Mark the response that best explains your reaction to each statement. Mark *SA* if you strongly agree, *A* if you moderately agree, *U* if you are undecided, *D* if you moderately disagree, and *SD* if you strongly disagree.

	SA	A	U	D	SD
1. Society is superior to the individual.	___	___	___	___	___
2. The function of the school is to prepare individuals for society through conformity.	___	___	___	___	___
3. The function of the school is to relate a certain amount of information which is basic and necessary for particular purposes.	___	___	___	___	___
4. Education should focus on how to pass on information, not how to use it.	___	___	___	___	___
5. Knowledge (understanding), not the pieces of information composing it, should be the central focus of schooling.	___	___	___	___	___
6. The emphasis in schooling should be away from memorization toward inquiry, discovery, and investigative methods which make students think at higher cognitive levels — process focus.	___	___	___	___	___
7. Students should be guided toward learning to survive in society by applying skills and abilities which the school has enabled them to learn.	___	___	___	___	___
8. Education should deal with the arts and skills of survival both in an individual and societal (cultural) context.	___	___	___	___	___
9. Education should emphasize the search for freedom of the individual within society.	___	___	___	___	___
10. Education should encourage the individual to become self-directed, self-motivated, self-actualized.	___	___	___	___	___

*Based on Searles (29).

Statements 3 and 4 present key concerns of the search for information. Believers in this search view the student as an information (data) processing animal receiving impulses through the five senses. They see the human brain as analogous to a computer, storing and organizing bits and pieces of information for later use. The function of the school and the teacher is to provide this information. The emphasis is on how to pass on the information, not how to use it.

Statements 5 and 6 describe the search for knowledge. This search involves the active process of relating bits of information to provide structures of knowledge. Knowledge itself becomes the central focus; emphasis is away from memorization toward inquiry, discovery, and other investigative methods which make students think at higher cognitive levels. This is the creative act of relating new information to the old and creating new ideas.

Statements 7 and 8 reflect the search for competence. In this search, the teacher provides an environment in which students can learn basic skills and abilities which will allow them to compete and survive in society. The program focuses on the development of coping skills — those needed to handle individual stresses — including decisionmaking, problem analysis, gaming, learning to learn, and a tolerance for ambiguity.

Statements 9 and 10 concern the other polar position, the search for self. This search emphasizes all elements of human development — cognitive, affective, physical, and social — and encourages individuals to become self-directed, self-motivated, and self-actualized. It is based on the idea that humans are free to follow the dictates of their conscience, seeking self-acceptance on their own standards rather than acceptance by others on theirs.

The contemporary educational viewpoints and Searles's Searches, then, can help give direction to the choice of educational goals and purposes. By choosing one of these instructional emphases or by combining one or more into a personal statement of instructional purpose, teachers can develop yet another element necessary to understanding the teaching and learning process.

METHODS OF INSTRUCTION

Although space limitations do not permit a review of all the methods, strategies, and techniques available to the classroom teacher, it is important to consider, at least briefly, the implications of teacher choices of these approaches for planning and implementing instructional programs. Therefore, this section will discuss three broad classification schemes.

First, methods chosen may differ in the degree to which they plan or allow student participation. McKeachie (21) has defined two differing perspectives, instructor-centered and student-centered methods. Table 5-3 summarizes the dimensions of their differences.

Table 5-3

Differences Between Instructor-Centered and Student-Centered Methods of Instruction*

Instructor-Centered	Student-Centered
Goals	
1. Determined by instructor.	1. Determined by the group.
2. Emphasis upon intellectual changes.	2. Emphasis also on affective and attitudinal changes.
3. No attempt to develop group cohesiveness.	3. Attempts to develop group cohesiveness.
Classroom Activities	
1. Much instructor participation.	1. Much student participation.
2. Instructor-student interaction.	2. Student-student interaction.
3. Instructor corrects, criticizes, or rejects erroneous or irrelevant student contributions.	3. Instructor accepts and works with erroneous or irrelevant student contributions.
4. Instructor determines activities.	4. Group decides own activities.
5. Discussion kept on course activities.	5. Discussion of personal experiences encouraged.
6. Traditional use of tests and grades.	6. Deemphasis of test and grades.
7. Instructor responsible for evaluation.	7. Students share responsibility for evaluation.
8. Instructor avoids interpretation of feelings.	8. Instructor interprets feelings and ideas of class members when necessary for class progress.

*Based on McKeachie (21, pp. 65–76).

The purpose of student-centered methods is to break away from the traditional teacher-dominated classroom and to encourage greater student responsibility and participation. While retaining authority in such classrooms, the teacher delegates much responsibility to students and surrenders the authoritarian role common to the instructor-centered classroom. In his review of the research on these two methods, McKeachie (21, pp. 76–77) found that student-centered instruction fared well when compared to instructor-centered teaching. He found student-centered methods to be superior in developing the ability to apply concepts and in fostering attitudes, motivation, and group membership skills. Student-centered classrooms

also evidence more higher-level cognitive growth. Finally, McKeachie also disproved the suggestion that student-centered methods might be less effective than instructor-centered methods in achieving lower-order cognitive objectives.

> The choice of instructor-centered vs. student-centered discussion thus appears to depend upon one's goals. The more highly one values outcomes going beyond knowledge acquisition, the more likely that student-centered methods will be preferred. (21, p. 76)

Again, the choice, is one for each teacher to make.

A second broad scheme for classifying approaches to instruction focuses on the style of instruction. Table 5-4 lists the elements of two styles, expository and inferential.

Table 5-4
Two Styles of Instruction

Expository Style	Inferential Style
1. Sees communication mainly from the side of the sender (teacher)	1. Tries to see communication from the side of the receiver (learner)
2. Concentrates on imparting information	2. Relies more on giving instructions which encourage self-directed inquiry
3. Keeps content and sequence of information under the control of the instructor	3. Delegates control to students wherever and whenever possible
4. Allows the sequence to be determined by the requirments of the subject matter	4. Makes allowance for the individual learner's psychological needs
5. Aims at the direct acquisition of cognitive skills — "intellectual excellence"	5. Indirectly inculcates values and attitudes — "moral excellence"
6. Is openly didactic	6. Resorts to heuristic methods
7. Thinks of instruction as an additive process, advancing gradually step by step	7. Answers to a cyclical principle — the sudden apprehension of wholes
8. Appeals at all points to the learner's rationality	8. Engages the learner's sympathy
9. Believes it is not safe to leave the learner to his or her own devices	9. Believes that under guidance the learner can look after himself or herself

Lecture, lecture-recitation, drilling, directive questioning, and heavy reliance on textbooks and structured assignments are examples of the fairly traditional expository style. Inquiry, discovery, student-centered discussion, simulations, valuing, brainstorming, and independent study, on the other hand, serve as examples of the inferential style.

Bergquist and Phillips (2) suggest this final classification scheme for looking at the complex phenomenon that is instruction. Basing their outline in part on a threefold distinction suggested by Axelrod (1), they developed descriptions of what are essentially three basic configurations of teacher types, student learning styles, educational environments, and content orientations. Although written to describe teaching and learning at the higher education level, the three configurations clearly have value for teachers at other levels as well.

> *Content-centered teaching and learning.* The primary task in this mode of teaching and learning is to cover the material of a course or discipline in a coherent and systematic manner. The content of various courses within a discipline is usually kept discrete, and the organization of the discipline is ordered in generally the same way in most colleges and universities. The teacher is viewed as expert, formal authority, or "priest"; the most compatible students are those who exhibit competitive or dependent learning styles. The goals of courses with this orientation are usually set by the demands of the material; evaluation is usually objective and performance is measured against the material. Lectures and formal discussions are the usual method of instruction. The content of these courses is primarily cognitively and/or skills oriented, and the environment will probably either be oriented toward the teacher as a source of information or will be automated.

> *Instructor-centered teaching and learning.* In this mode of teaching and learning, attention is most often focused on the instructor, not primarily as a source of information, but as a model of the way one should approach a particular field or discipline. The best ways of understanding and handling the concepts of the course are demonstrated by the instructor's own behavior and personality. The teacher is usually viewed as a socializing agent or ego ideal; he is a "shaman" and performer; when particularly talented, he can be very charismatic. He may make dramatic use of the lecture format, while discussion sessions tend to be oriented toward him. Students who are highly dependent will rather non-critically embrace this mode;

participant students will approve of this mode if the instructor appears to be competent; the discouraged worker may find this mode comfortable if the instructor pays some attention to him. Both the goals and standards of evaluation are usually set by the teacher, often in a subjective manner. The content of these courses, though often cognitively oriented, may have an important affective component. The environment may be either teacher- or interaction-oriented, with the focus in the latter case clearly on the teacher.

Student-centered teaching and learning. This kind of teaching and learning emphasizes the intellectual training and/or personal growth of the students. The teacher acts primarily as a facilitator and as a person in relationship to students who are collaborative or independent. This mode is also appropriate for the avoidant student if he gives the experience a chance. Rather heavy emphasis is often given in this mode to establishing learning contracts between teacher and student which enable them to define specific learning goals, resources, and means of evaluation which are uniquely tailored for each student. The teaching methods most frequently used are student-run discussions, group discussions, role plays, simulations, field work, and independent study. The content here will be either cognitively or affectively oriented (or both), and the environments may be interaction-oriented, student-oriented, sheltered experience-oriented, or experience-oriented. (2, p. 18)

For the convenience of the reader, Table 5-5 presents these three configurations in graphic form. By reviewing your responses to activities in which you assessed your teaching style (Table 3-3), the style of educational environment you use most frequently (Table 3-2), and your content orientation (Table 4-1), and after evaluating your preference for certain types of students (based on the Grasha and Riechmann descriptions included as part of chapter 2), you should be able to place yourself generally into one of the three configurations.

Table 5-5

Three Basic Configurations of Teacher, Environment, Content, and Student Styles*

Style / Type	Content-Centered Teaching and Learning (focuses on teacher as giver of information)	Instructor-Centered Teaching and Learning (teacher more a model than source of information)	Student-Centered Teaching and Learning (emphasizes intellectual training and/or personal growth of students)
Teaching Typology	Expert Formal authority	Socializing agent Ego ideal	Facilitator Person
Educational Environment	Teacher-oriented Automated	Teacher-oriented Interaction-oriented (if focused on teacher)	Interaction-oriented Student-oriented Sheltered experience-oriented Experience-oriented
Instructional Content	Cognitively oriented Skills-oriented	Cognitively oriented Affectively oriented (as relates to teacher)	Cognitively oriented Affectively oriented
Learning Style	Competitive Dependent	Participant Avoidant	Collaborative Independent Avoidant

*Based on Bergquist and Phillips (2, pp. 17–19).

GROUP PROCESSES

Two decades ago Getzels and Thelen made some important observations on the classroom group as a social system. These included the following:

1. The classroom is an "accidental" collection of persons having little or no legitimate recourse from participating in "a priori" goals and procedures of the school.
2. In addition to the problem of relating one's self to the associations and activities required in the classroom, each individual must also "gear in" his or her own needs, goals, and attitudes to the way of life that is prescribed in the classroom.
3. The teacher is in almost absolute power in the sense that the only power students may legitimately have over the classroom group

is that permitted or delegated by the teacher.

4. The "accidental" and compulsory interaction in the classroom may be modified by students who set and enforce their own goals and standards within the classroom. (12, pp. 62–65)

The dimensions of the problem generated by the "accidental" and "enforced" nature of the classroom group and the effect of these other "factors" on instruction and classroom learning have received increased attention in recent years.

As Schmuck and Schmuck (28) have pointed out in their outstanding book on this topic, the classroom is not a depersonalized setting. Rather, it is charged with emotion between teachers and students and between each student and his or her peers. Teaching and learning, therefore, are complementary acts that involve a variety of interpersonal processes.

> When this process takes place in the classroom, it is complicated and affected by the relationships among students, and between the students and the teacher. In some classrooms the learning process is enhanced by peer relationships that actively support a productive learning atmosphere; in others, it is inhibited by peer relationships. The teacher's instructional style and the curriculum, the student's feelings about himself and his academic abilities, and the nature of the interpersonal relationships in the classroom are major influences on this teaching-learning process. (28, p. 3)

Because of the "accidental" nature of their composition, classroom units are not necessarily groups. Each varies on a dimension which may be called "groupness" — the ability of teacher and students in a teaching and learning setting to create a positive classroom climate. In such a climate students share high amounts of potential *influence* — with one another and the teacher; high levels of *attraction* exist for the group as a whole and between classmates; *norms* are supportive for getting academic work done, as well as for maximizing individual differences; *communication* is open and featured by dialogue; and the processes of working and developing together as a group are considered relevant for study in themselves. It is the style of relating among members of the classroom group (28).

Most classroom research corroborates the view that a positive classroom climate enhances students' self-esteem and thereby improves their academic performance. For example, researchers have found that —

1. Classrooms are more productive when leadership is executed by many members of the class unit. In classrooms where only a few

students are able to influence others, powerlessness and negative feelings about self and school result.

2. If students feel liked and respected they will be more likely to behave in ways which make them worthy of the liking and respect of others. When the classroom environment is filled with anxiety, hostility, and self-doubt, students will behave in unconstructive and unproductive ways.
3. Classrooms in which there is a tone of encouragement and flexibility rather than one of restraint and rigidity in group norms are more productive.
4. Communication patterns that are open — that involve high amounts of lively dialogue and feedback — lead to more learning than do communication patterns that are restricted — where members hesitate and hold back from speaking, where little empathy and involvement exist, and where the teacher does most of the talking.
5. High levels of cohesiveness toward productive goals are supportive of classroom learning. (28)

The teacher interested in improving the learning of all students will be well-advised, therefore, to consider these informal relationships in planning the more formal instructional program.

DEVELOPING A PERSONAL MODEL

For years curriculum theorists have attempted to describe accurately and succinctly the process that is teaching and learning. This publication has used two fairly broad models to give structure to this discussion: Searles' System of Instruction and the author's Model of the Teaching and Learning Process. It has also examined several models describing the more specific activities of the instructional process. A brief discussion of two additional models follows.

Popham and Baker (25) have proposed a Goal-Referenced Instructional Model, a scheme featuring four essentially distinct operations. Figure 5-1 (on p. 62) presents their model and the courses of action dictated by evaluation of results through the model.

The Popham and Baker model emphasizes the teacher's intellectual decisionmaking prior to and after instruction; it is really more a planning and assessment model than a teaching procedure scheme. The teacher first

specifies the objectives of instruction in terms of learner behavior; next pre-assesses students as to their current status with respect to those objectives; then designs instructional activities to bring about the intended objectives; and, finally, evaluates students' attainment of objectives. When the specified objectives are not achieved, Popham and Baker assume this reflects inadequacies in instruction and requires revision in teaching plans or implementation. If the objectives are achieved, the teacher should briefly celebrate his or her accomplishments and consider the possibility of augmenting the objectives in order to accomplish even more (25, pp. 13–17).

Pierce and Lorber (24) in their Logical Instruction Model have offered a similar but more precise model. The LIM builds upon the work of Popham and Baker and diagrams schematically a foundation for the teaching and learning process that is more complete and self-explanatory than most other models. Figure 5-2 (on p. 62) presents it graphically.

The major steps of the LIM generally parallel those of the earlier model. The preassessment phase, however, provides additional detail. This phase answers two specific questions and delineates two specific courses of action. In some cases students may already possess the required skills or information and need no further instruction. In a few instances, despite careful teacher planning, students may not have acquired the beginning competencies needed for successful progress. In such cases the teacher must write remedial objectives and provide the necessary background (24, p. 11).

These two models provide a starting point for teacher efforts to develop or refine the model which best meets individual needs, a personal model of teaching and learning. The next chapter will provide additional information and direction to assist in this endeavor.

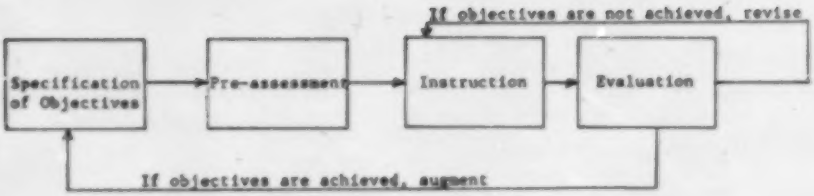


Figure 5-1
Goal-Referenced Instructional Model and Courses of Action Dictated by Evaluation of Results*

*Popham and Baker (25, pp. 13 and 17)

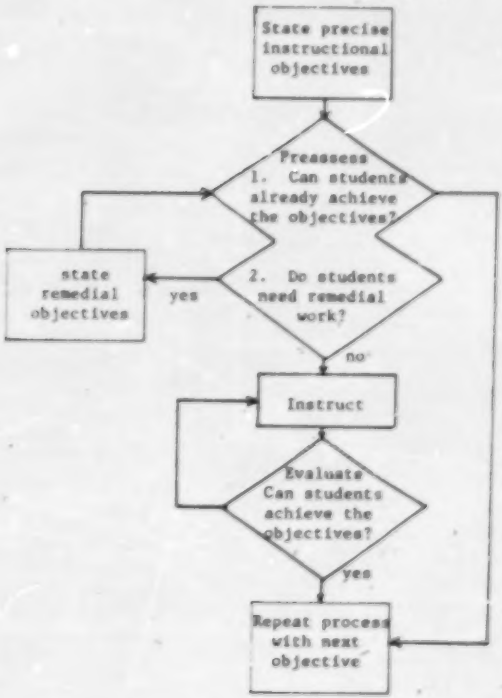


Figure 5-2
Logical Instruction Model*

*Pierce and Lorber (24, p. 4)

CHAPTER 6
PRESCRIPTION, APPLICATION, AND EVALUATION

The four preceding chapters discussed in some detail the subsets of the Identification phase of the model for teaching and learning. This chapter will describe very briefly the remaining elements of the model. To refresh your memory, Figure 6-1 graphically depicts those elements again.

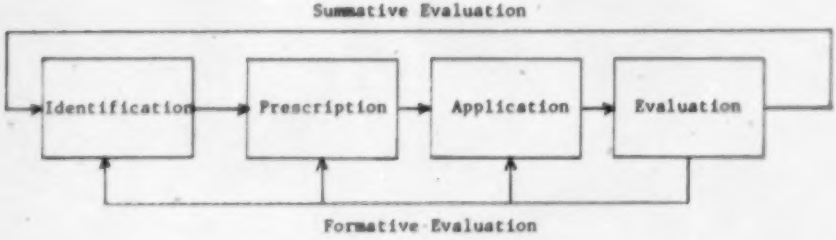


Figure 6-1
Elements of the Teaching and Learning Process

PRESCRIPTION

During the Identification phase, you were asked to make a series of decisions regarding the nature of (1) the learners with whom you will be working, (2) the content with which you will be dealing, and (3) the process which is instruction. Further, you were asked to examine your role as teacher in this process. Those decisions form the base from which planning for instruction — termed here Prescription — develops. In other words, as a result of an analysis of each of these concerns, it is possible to establish the context of instruction — to make long-range diagnoses and to set the rationale and the goals of instruction — and to move to the all-important phase of instructional planning or Prescription.

The elements of the Prescription phase are not unusual or difficult. It is important, however, to take care to ensure that planning is complete. The first step is based on decisions made earlier — during Identification —

about the content to be treated, its place in the overall curriculum, and broad-ranging goals for instruction. Now, it is time to write specific instructional objectives — stating them in terms of specific behaviors, meeting the criteria of some established system for clarity, and reflecting the orientation of the content selected for study (cognitively oriented, skills-oriented, affectively oriented, or some combination thereof). Further, the objectives should match the rationale and goals of instruction and should be suited to the age, grade level, and interest of students.

Drawing from the long-range diagnosis that is part of Identification, then, teachers can establish the basis for individualization for a unit of instruction. In other words, they can use what they know about the varying knowledge, interest, ability, and need levels of individual students to determine how to offer differential treatment to individuals or groups of students. Diagnosis, for example, may show that some students have mastered almost all, if not all, the objectives for a unit, while some may have mastered few, if any, of these objectives. The majority of the class, though, will probably be somewhere between these extremes. Careful planning is necessary, therefore, to match the activities of individual students to the objectives they must yet master. Because of varying student competence, relative both to one another and to goals and objectives for study, this basis for individualization should be established separately for each unit based on unit goals, as part of a year-long, planned program addressing many and varied goals.

Advance planning should also include procedures for implementing a unit of instruction and for utilizing staff, facilities, resources, time, and contracting, scheduling, and recordkeeping devices. Provisions for management and motivation should also be considered.

After examining all the various options, the teacher can finally design and create activities matched to the objectives previously established, using many kinds of available instructional materials — varied texts, media hardware and software, programmed instruction hardware and software, library materials, and so forth. He/she should also consider a variety of learning settings, such as large and small group instruction, independent study, and tutorials. The range of instructional methods, strategies, and techniques — including discussion, questioning, lecture, simulations, group projects, role playing, and inquiry — should be diverse enough to suit the teacher and the class. Finally, there should be varied forms of evaluation. Only the bounds of a teacher's own creativity and imagination should set the limits of the choices available to students.

APPLICATION

The next important phase is the implementation of the teacher's plans. If each objective has a choice of activities, an interesting format for both teacher and students is possible. The teacher may list objectives in graphic form including the activities designed to meet each objective. With this mode of instruction, the number and nature of both objectives and activities, of course, are subject to individual preference and should be matched to the nature of the unit and to the skills and experience of teacher and students.

As a first step in implementing such a design, students would have the opportunity to study the objective and activity chart. What the student does with the chart depends upon the teacher's plans for the unit. The teacher may decide to completely prescribe a student's program, based on diagnostic data; that is, the teacher would indicate the objectives the student needs to meet and then choose the activities best suited to the particular student's abilities, interests, and needs.

While this method is an ideal use of diagnostic data, it allows the individual student little freedom of choice. An alternate method is to indicate to the student the objectives still to be met and to allow him or her free choice of activities to meet the objectives, assuming that the student will select those activities best suited to his or her needs. It is possibe to use each of these methods at different times or to combine the two.

When using such a format, the teacher must consider at least two problems. First, the system is not practical without a clear and fully developed form for contracting, scheduling, and recording student work. One teacher cannot keep track of the work of 25 to 35 students without such help. The second problem concerns the need to keep students together as a class group. With totally self-paced instruction, some students will move ahead of others in the class, and group-oriented activities will be lost. Figure 6-2 presents a plan to deal with such problems. This design provides both flexibility for individuals and control over the class as a group.

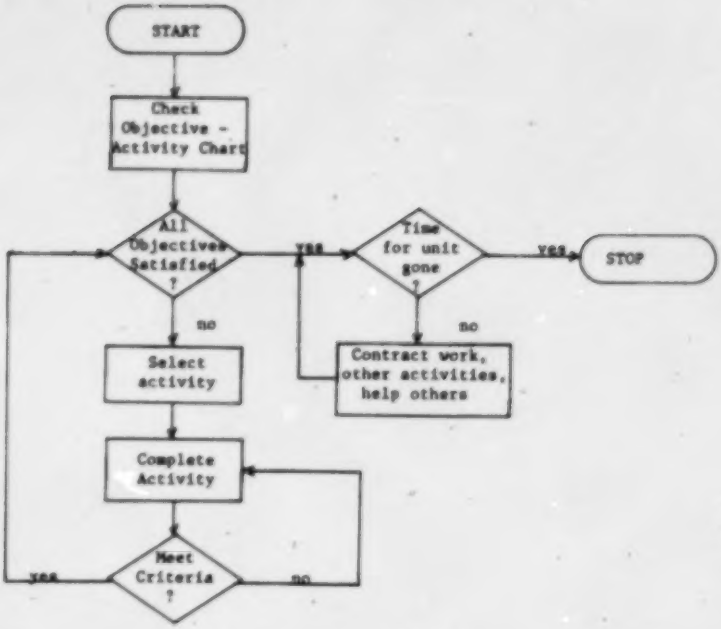


Figure 6-2
Flow Chart of Students' Progress in Charted Activities*

*Blue (6).

EVALUATION

The final phase of the model is Evaluation. Two forms of evaluation, formative and summative, will be treated here. (As you will remember, the earlier chapters on Identification included diagnostic evaluation — see especially chapter 2.)

Formative evaluation assesses the progress of instruction as it is taking place. While teachers frequently exhibit such behavior as they "think on their feet" in presenting a classroom activity, for example, less frequently do they use a systematic approach to find out if they are moving toward their goals as efficiently and directly as possible. The use of tests and other techniques to provide feedback during instruction, to modify instruction, and to evaluate modifications of instruction, however, is an important com-

ponent of the teaching and learning process. Few instructional plans are perfect, and even fewer plans are applied perfectly. It therefore becomes necessary to gather information continuously, formally and informally, in order to make adjustments in one's design for Identification, Prescription, and Application. Plans for Evaluation, moreover, should also be subject to the same continuous scrutiny.

Teachers are constantly receiving informal feedback upon which to base formative evaluation. Blank faces, slouching bodies, tapping pencils, noisy classrooms — all are speaking to the observant, concerned teacher. They call for changes in some element of the instructional process.

More formal measurement of student growth is also possible. Through systematized observational techniques, teachers can evaluate student progress. Through the use of tests and other evaluative devices during the course of a unit of work, teachers can determine where instruction has or has not been effective. Through the use of student evaluative feedback instruments, rating scales, and questionnaires, teachers can give students the opportunity to offer their opinions on the unit's progress and the teacher's performance. Such student evaluations of teachers should of course be the private property of individual teachers for their own use; they should not be used as part of the formal evaluation process of teachers for purposes of retention, tenure, or promotion. Finally, student self-evaluations can provide the instructor with one other piece of information for use in redesigning an educational plan.

Summative evaluation determines whether instruction has been successful after completion of the instructional program. According to this broad definition, it refers to virtually all techniques used by teachers to measure student growth as a result of instructional and other related activities. It, too, can be both informal and formal. Because of the demands of grading and reporting, however, most teachers tend to employ fairly formal measurement techniques to gather data for summative evaluation. These techniques serve to assess student development with more precision and to provide the information necessary for designing subsequent units of instruction.

BIBLIOGRAPHY

1. Axelrod, Joseph. *The University Teacher as Artist*. San Francisco: Jossey-Bass, 1973.

2. Bergquist, William H., and Phillips, Steven R. *A Handbook for Faculty Development*. Washington, D.C.: Council for the Advancement of Small Colleges, 1975.

3. Biehler, Robert F. *Psychology Applied to Teaching*. 2d ed. Boston: Houghton Mifflin Co., 1974.

4. Bigge, Morris L., and Hunt, Maurice P. *Psychological Foundations of Education: An Introduction to Human Motivation, Development, and Learning*. 3d ed. New York: Harper and Row, 1980.

5. Bloom, Benjamin S., and others, eds. *Taxonomy of Educational Objectives: Handbook I: Cognitive Domain*. New York: McKay, 1956.

6. Blue, Terry W. "A Model for Individualizing Instruction." Paper presented at Annual Meeting of International Congress for Individualized Instruction, Boston, Mass., November 18, 1976.

7. DeCecco, John P., and Crawford, William R. *The Psychology of Learning and Instruction: Educational Psychology*. 2d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1974.

8. Dunn, Rita S., and Dunn, Kenneth J. "Learning Styles/Teaching Styles: Should They . . . Can They . . . Be Matched?" *Educational Leadership* 36, no. 4 (January 1979): 238–44.

9. _____, _____, and Price, Gary E. *Learning Style Inventory*. Lawrence, Kans.: Price Systems, 1975.

10. Fischer, Barbara Bree, and Fischer, Louis. "Styles in Teaching and Learning." *Educational Leadership* 36, no. 4 (January 1979): 245–54.

11. Fraenkel, Jack R. *Helping Students Think and Value: Strategies for Teaching the Social Studies*. 2d ed. Englewood Cliffs, N.J.: Prentice-Hall, 1980.

12. Getzels, Jacob W., and Thelen, Herbert A. "The Classroom Group as a Unique Social System." In *The Dynamics of Instructional Groups: Sociological Aspects of Teaching and Learning*, edited by Nelson B. Henry, pp. 52–82. Chicago: University of Chicago Press, 1960.

13. Grasha, Anthony F. "Observations on Relating Goals to Student Response Styles and Classroom Methods." *American Psychologist* 27 (1972): 144–47.

14. Gregorc, Anthony F. "Learning/Teaching Styles: Potent Forces Behind Them." *Educational Leadership* 26, no. 4 (January 1979): 234–36.

15. Gronlund, Norman E. *Stating Objectives for Classroom Instruction*. 2d ed. New York: Macmillan, 1978.

16. Harrow, A. J. *A Taxonomy of the Psychomotor Domain*. New York: McKay, 1972.

17. Johnson, James A.; Collins, Harold W.; Dupuis, Victor L.; and Johansen, John H. *Introduction to the Foundations of American Education*. 4th ed. Boston: Allyn and Bacon, 1979.

18. Krathwohl, D. R., Bloom, B. S., Masia, B. B. *Taxonomy of Educational Objectives: Affective Domain*. New York: McKay, 1964.

19. Mann, Richard, and others. *The College Classroom: Conflict, Change, and Learning*. New York: Wiley, 1970.

20. Maslow, Abraham H. *Toward A Psychology of Being*. 2d ed. Princeton, N.J.: Van Nostrand, 1968.

21. McKeachie, Wilbert J. *Teaching Tips: A Guidebook for the Beginning College Teacher*. 6th ed. Lexington, Mass.: D. C. Heath, 1969.

22. Milhollan, Frank, and Forisha, Bill E. *From Skinner to Rogers: Contrasting Approaches to Education*. Lincoln, Nebr.: Professional Educators Publications, 1972.

23. Mohan, Madan, and Hull, Ronald E. *Teaching Effectiveness: Its Meaning, Assessment, and Improvement*. Englewood Cliffs, N.J.: Educational Technology Publications, 1975.

24. Pierce, Walter D., and Lorber, Michael A. *Objectives and Methods for Secondary Teaching*. Englewood Cliffs, N.J.: Prentice-Hall, 1977.

25. Popham, W. James, and Baker, Eva L. *Systematic Instruction*. Englewood Cliffs, N.J.: Prentice-Hall, 1970.

26. Pullias, Earl V., and Young, James A. *A Teacher Is Many Things*. 2d ed. Bloomington, Ind.: Indiana University Press, 1977.

27. Riechmann, Sheryl, and Grasha, Anthony F. "A Rational Approach to Developing and Assessing the Construct Validity of a Student Learning Style Scales Instrument." *Journal of Psychology* 87 (1974): 213–23.

28. Schmuck, Richard A., and Schmuck, Patricia A. *Group Processes in the Classroom*. Dubuque, Iowa: W. C. Brown, 1971.

29. Searles, John E. *Toward a Style of Teaching*. Lancaster, Pa.: Franklin and Marshall College, 1975.

30. _____. *A System for Instruction*. Scranton, Pa.: International Textbook, 1967.

31. Weil, Marsha, and Joyce, Bruce. *Information Processing Models of Teaching*. Englewood Cliffs, N.J.: Prentice-Hall, 1978a.

32. _____, and _____. *Social Models of Teaching*. Englewood Cliffs, N.J.: Prentice-Hall, 1978b.

33. _____, _____, and Kluwin, Bridget. *Personal Models of Teaching*. Englewood Cliffs, N.J.: Prentice-Hall, 1978c.

APPENDIX
SUPPLEMENTAL SOURCES

This brief book has examined and analyzed key elements of the teaching and learning process. By design, some phases of the process received more attention than others. In no case, however, was the treatment of a topic exhaustive. Fortunately, other sources of information are available to supplement this discussion. When combined with the references cited in each chapter, these sources provide materials for a fairly extensive review of selected elements of the teaching and learning process.

These entries are arranged alphabetically. Numbers in parentheses following certain entries indicate chapters to which the source refers. When no chapter is cited, the work is of general value.

Bany, Mary A., and Johnson, Lois V. *Classroom Group Behavior*. New York: Macmillan, 1967. (5)

Beck, Robert C. *Motivation: Theories and Principles*. Englewood Cliffs, N.J.: Prentice-Hall, 1978. (2)

Biehler, Robert F. *Psychology Applied to Teaching*. 3d ed. Boston: Houghton Mifflin, 1978. (2, 5)

Bloom, Benjamin S. *Human Characteristics and School Learning*. New York: McGraw-Hill, 1976.

Bruner, Jerome S. *Toward a Theory of Instruction*. Cambridge, Mass.: Harvard University Press, 1966.

Chase, Clinton I. *Measurement for Educational Evaluation*. 2d ed. Reading, Mass.: Addison-Wesley, 1978. (6)

Clark, Leonard H., and Starr, Irving S. *Secondary School Teaching Methods*. 3d ed. New York: Macmillan, 1976. (3, 5)

Cooper, James M., and others. *Classroom Teaching Skills: A Handbook*. Lexington, Mass.: D. C. Heath, 1977. (4, 5)

Curwin, Richard L., and Fuhrmann, Barbara Schneider. *Discovering Your Teaching Self*. Englewood Cliffs, N.J.: Prentice-Hall, 1975. (3)

Davies, Ivor K. *Objectives in Curriculum Design*. New York: McGraw-Hill, 1976. (1, 6)

Davies, Robert H.; Alexander, Lawrence T.; and Yelon, Stephen L. *Learning System Design*. New York: McGraw-Hill, 1974. (1, 6)

Dunn, Rita, and Dunn, Kenneth. *Practical Approaches to Individualizing Instruction*. West Nyack, N.Y.: Parker, 1972. (2, 3)

_____, and _____. *Teaching Students Through Their Individual Learning Styles: A Practical Approach*. Reston, Va.: Reston Publishing Co., 1978. (2, 3)

Gage, N. L. *The Scientific Basis of the Art of Teaching*. New York: Teachers College Press, 1978.

_____, and Berliner, David C. *Educational Psychology*. 2d ed. Chicago: Rand McNally, 1979. (2, 5)

Gazda, George M., and Corsini, Raymond J., eds. *Theories of Learning*. Itasca, Ill.: F. E. Peacock, 1980. (2)

Gibson, Janice T. *Psychology for the Classroom*. Englewood Cliffs, N.J.: Prentice-Hall, 1976. (2, 5)

Good, Thomas L., and Brophy, Jere E. *Educational Psychology: A Realistic Approach*. 2d ed. New York: Holt, Rinehart, and Winston, 1980. (2, 5)

Grambs, Jean D., and Carr, John C. *Modern Methods in Secondary Education*. 4th ed. New York: Holt, Rinehart, and Winston, 1979. (4, 5)

Guilford, J. P. *The Nature of Human Intelligence*. New York: McGraw-Hill Book Co., 1967.

Hamachek, Don E. *Psychology in Teaching, Learning, and Growth*. 2d ed. Boston: Allyn and Bacon, 1979. (2, 5)

Henak, Richard M. *Lesson Planning for Meaningful Variety in Teaching*. Washington, D.C.: National Education Association, 1980. (2)

Hills, John R. *Measurement and Evaluation in the Classroom*. Columbus, Ohio: Charles E. Merrill, 1976. (6)

Kash, Marilynn M., and Borich, Gary D. *Teacher Behavior and Pupil Self-Concept*. Reading, Mass.: Addison-Wesley, 1978. (2, 3)

Kneller, George F. *Introduction to the Philosophy of Education*. 2d ed. New York: John Wiley, 1971. (5)

Lindgren, Henry Clay. *Educational Psychology in the Classroom*. 6th ed. New York: Oxford Press, 1980. (2, 5)

Luke, Robert A. *Teacher-Centered In-Service Education: Planning and Products*. Washington, D.C.: National Education Association, 1980. (2)

Mager, Robert F. *Preparing Instructional Objectives*. 2d ed. Belmont, Calif.: Fearon Publishers, 1975. (6)

Meeker, Mary. *The Structure of Intellect: Its Interpretation and Uses*. Columbus, Ohio: Charles E. Merrill Publishing Co., 1969.

Messick, Samuel, and Associates. *Individuality in Learning*. San Francisco: Jossey-Bass, 1976. (2)

Ornstein, Allan C., and Miller, Harry L. *Looking into Teaching*. Chicago: Rand McNally, 1980. (3, 5)

Piaget, Jean, and Inhelder, Barbel. *The Psychology of the Child*. New York: Basic Books, 1969.

Pipe, Peter. *Objectives — Tool for Change*. Belmont, Calif.: Fearon Publishers, 1975. (6)

Popham, W. James. *Evaluating Instruction*. Englewood Cliffs, N.J.: Prentice-Hall, 1973. (6)

_____, and Baker, Eva L. *Planning an Instructional Sequence*. Englewood Cliffs, N.J.: Prentice-Hall, 1970. (1, 6)

_____, and _____. *Establishing Instructional Goals*. Englewood Cliffs, N.J.: Prentice-Hall, 1970. (1, 6)

_____ and _____. *Expanding Dimensions of Instructional Objectives*. Englewood Cliffs, N.J.: Prentice-Hall, 1970. (6)

Ryan, Kevin, and Cooper, James M. *Those Who Can, Teach*. 3d ed. Boston: Houghton Mifflin, 1980. (3, 5)

Sadker, Myra Pollack, and Sadker, David Miller. *Teachers Make the Difference*. New York: Harper and Row, 1980. (3)

Schmuck, Richard; Chesler, Mark; and Lippitt, Ronald. *Problem Solving to Improve Classroom Learning*. Chicago: Science Research Associates, 1966. (5)

Seaberg, Dorothy I. *The Four Faces of Teaching*. Pacific Palisades, Calif.: Goodyear Publishing, 1974. (3)

Silvernail, David L. *Teaching Styles as Related to Student Achievement*. Washington, D.C.: National Education Association, 1979. (2)

Smith, Jay M., and Lusterman, Don-David. *The Teacher as Learning Facilitator*. Belmont, Calif.: Wadsworth, 1979. (3)

Smith, M. Daniel. *Educational Psychology and Its Classroom Applications*. 2d ed. Boston: Allyn and Bacon, 1978. (2, 5)

TenBrink, Terry D. *Evaluation: A Practical Guide for Teachers*. New York: McGraw-Hill, 1974. (6)

Torrance, E. Paul, and Myers, R. E. *Creative Learning and Teaching*. New York: Dodd, Mead, and Co., 1970. (3, 4, 5)

Tuttle, Frederick B., Jr., and Becker, Laurence A. *Characteristics and Identification of Gifted and Talented Students*. Washington, D.C.: National Education Association, 1980. (2)

_____ and _____. *Program Design and Development for Gifted and Talented Students*. Washington, D.C.: National Education Association, 1980. (2)

Tyler, Leona E. *Individuality*. San Francisco: Jossey-Bass, 1978. (2, 3)

Vander Zanden, James W. *Educational Psychology in Theory and Practice*. New York: Random House, 1980. (2, 5)

Welton, David A. *Realms of Teaching*. Chicago: Rand McNally, 1979. (3)

Wlodkowski, Raymond J. *Motivation and Teaching: A Practical Guide*. Washington, D.C.: National Education Association, 1978. (2)

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